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# East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS



FOREIGN BROADCAST INFORMATION SERVICE

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20 August 1984

## EAST EUROPE REPORT

### ECONOMIC AND INDUSTRIAL AFFAIRS

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CEMA CONFERENCE EXPRESSES SOVIET IDEA OF INTEGRATION

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 16 Jul 84 p 10

[Article by V. Meier: "CEMA Conference Caused Little Stir in the East"]

[Text] Budapest, Jul--The conference of the heads of government of the CEMA (Council for Economic Mutual Assistance) nations, so long in preparation, has passed without causing much of a stir in the Eastern European capitals. One gets the impression that the results were scarcely worth the trouble. Certain political contacts made before or at the conference, particularly Ceausescu's trip to Moscow just a week before the general meeting in the middle of June, appear to be of greater importance. This visit produced a substantial shift by Romania toward the Soviet line--for the present, individual initiatives by Romania have been halted. Romania's participation in the Olympic Games in Los Angeles is as far as Ceausescu can go at this time. This move in turn characterizes political relationships in general in Eastern Europe as they have developed under the current Kremlin leadership.

This political situation was also reflected at the CEMA conference. A "declaration" encouraging their allies to hold a common political position on the "peace issue"--it is difficult to say any more how many of these there have already been--seemed more important to the Soviet hosts than decisions on economic cooperation. The Soviet leadership used the current world situation to obligate their allies to a course of closer economic cooperation as well. However, the particulars of how this should be achieved seemed unclear. The communique admitted indirectly that the "complex program" of economic cooperation decided upon with great fanfare in Bucharest in 1971 could not succeed. In the East Bloc one hears that this time their thoughts on cooperation are "more realistic." Extracting this idea from the communique is difficult, however, because assurances from all the East Bloc capitals tell us that it represents a compromise between various ideas and opinions.

But in trying to discern how the East Bloc actually views its future forced march toward greater unity, one hears that an important point in the future will be the founding of joint business enterprises, some of which already exist in the USSR. Romania has also expressed clear agreement with such cooperation within the framework of business enterprises. Several years ago Bucharest would still have considered such projects "colonialism," but since the most important, so-called "modern" Romanian plants, those in the

petrochemical and new steel production industries, can scarcely operate at half capacity thanks to Ceausescu's grotesquely bad planning, Bucharest has "discovered" mutual assistance as a way of improving the utilization of available capacity.

In general, we are assured that the energy question, contrary to many opinions in the West, was not the central issue of the discussions. The Soviets had already made it clear that the East Europeans could no longer count on additional supplies of crude oil, and could expect additional natural gas supplies only if they built the necessary pipelines themselves. The word in the East Bloc is that in the long term crude oil and natural gas should instead be reserved for the petrochemical industry. The primary future source of energy in the East Bloc is atomic power; this was made absolutely clear in the communique. Coal is to be promoted as the second choice. As far as crude oil is concerned, the Soviet satellites are expected to conserve.

The USSR also seems to have made clear that it is not interested in promoting any further the exchange of "hard goods" for foreign currency within the CEMA nations. Within the scope of such business dealings, which on the average amount to about 12 percent of total CEMA trade, some of the Soviet satellites, particularly Romania and Hungary, were exchanging agricultural products mainly for additional crude oil. The USSR would rather sell its oil to the West in exchange for foreign currency. It is said in the East Bloc that the USSR naturally also had to obligate itself to purchase more consumer goods from its allies and to increase the price paid for these goods and for agricultural products as well. This demand was made primarily by Romania which is literally snatching food from the mouths of its citizens in order to continue to operate its "modern" industries which are now based on imports of energy-producing and other raw materials. Hungary, which has an easier time of it in terms of agricultural products, will probably have to make some adjustments in view of the new Soviet position. Up to now about 18 percent of its exports to the USSR consisted of foreign currency for "hard goods," primarily agricultural products. Without this business Hungary's balance of trade in foreign currency would probably have been negative. Add to all this Soviet demands for better quality.

In the East there is much talk about the "scientific and technical revolution." The smaller countries in particular dream of achieving parity with Western Europe in this regard. As far as this question is concerned, the Soviets played on the supposed "American technology boycott." The communique said that the East should also cooperate more on research and make the results available for all to use. Here, too, there may be major problems in the practical application of this idea. In this connection, some noteworthy ideas have surfaced in Prague, where lately the tone has been vehemently and securely in line with Moscow against the "one-sided advantages" which some socialist nations have derived from their cooperation with the West. The word from Prague is that socialist countries should pass on licenses purchased in the West to the other socialist countries, so that they need not also purchase the same licenses. Sellers of western licenses will have to guard against this in the future. Such maneuvers to circumvent western licensing agreements were already tried

without success in the 1950's: A communist country caught engaging in intrigues of this nature would have to bear the consequences of their actions.

During preparations for the CEMA conference, the Soviets proposed ideas on ways in which synchronization of the various economic systems could be strengthened in order to bring about improved cooperation. This can be viewed two ways: On the one hand, the USSR might want to emulate the economic reforms of some of the Eastern European countries and adopt them itself--under Andropov this view could have been read into the Soviet proposal. On the other hand, and under Chernenko this seems to be the prevalent opinion, this proposal could be interpreted as a warning to the Eastern Europeans not to take their reforms too far.

In Hungary as in Bulgaria, currently the only two "reformist" countries, it is said that the CEMA meeting did not pressure them in any way not to continue their reforms; on the contrary, a passage in the communique expressly recognized the various different types of organizational models. In Budapest as in Sofia there is therefore no feeling that their economic policies should be changed in any way.

As always the Hungarians demanded that cooperation be thought of in the "modern" sense rather than based on a set pattern, i.e. new ways of doing things should be tried. This time Poland no longer offered them assistance since the Warsaw regime is apparently determined to maintain its policy of reintegrating Poland into a one-sided economic exchange with the East Bloc--perhaps, it is said, out of necessity more than anything else. The question remains how to integrate Polish plants purchased from the West into the Eastern economic system. Poland and Romania, it is said, were proof that without the appropriate environment in the East even Western technology was nearly useless, and this should be considered a warning for countries such as Hungary to proceed with caution.

12552

CSO: 2300/568

CEMA COOPERATION IN MACHINE CONSTRUCTION REVIEWED

East Berlin AUSSENWIRTSCHAFT in German Vol 12 No 15, 11 Apr 84 p 25

[Unsigned article: "Cooperation of CEMA Countries"]

[Text] The CEMA countries have already had wide experience in cooperation in the area of machine building. Accordingly, the following current topics have also been included in the coordination of plans for the socio-economic development of the USSR and the other CEMA countries: research and development in the area of the construction of machinery and equipment for the construction industry, for road building and for municipal trade and industry. They correspond to the tasks of the engineering industry as established in the complex program and in long-term goal programs.

Two mutually complementary tasks currently face the machine-building industry:

- to create modern machine systems and complexes
- to organize specialization and cooperation in the production of new types of similar equipment.

Approximately 1500 designs of machinery for construction and road building are being manufactured in the CEMA countries; these can be further classified into about 60 technological groups. They have made mechanization possible in excavation, concrete, loading and unloading as well as other kinds of work. Every year, for example, the USSR produces on average more than 40,000 excavators, 50,000 bulldozers, 12,000 scrapers, 8,000 road graders, 30,000 mobile and turret slewing cranes, as well as a large amount of modern equipment for the cement industry, assembly work and the production of reinforced concrete sections. The USSR surpasses the western European countries with respect to the extent of production and nomenclature; with respect to excavators, bulldozers and scrapers, it surpasses the United States as well.

Specialization among the CEMA countries in the production of construction and road-building equipment has been increasing from year to year. Between 1971 and 1975 this specialization included 259 models of these kinds of machines; from 1976 to 1980, 566 models; and in the current Five Year Plan, 1,050 of 1,500 models are being manufactured in the CEMA countries.

## Rapid Growth of Cooperative Deliveries

The reciprocal supply of the aforementioned equipment between the USSR and the other CEMA countries (according to the agreements) amounted to 1,459 million rubles (for 1971 to 1975), 2,552 million rubles (1976 to 1980), and will come to 3,500 million rubles (1981 to 1985). More than 70 percent of that is attributable to the results of specialization and cooperation in production. Reciprocal cooperative supplies are growing particularly quickly (from 80 million to 327 million and 820 million rubles, respectively).

The USSR exports to the member countries of CEMA more than 400 models of construction and road-building machinery, for example, crane winches, rotary disks, rotary joints for turret slewing cranes, equipment for mobile slewing cranes and other equipment of this sort, and receives in return 84 models of this kind of machinery, including erecting cranes and vibration rollers (from the GDR), charging generators (CSSR), brickyard equipment (Bulgaria), equipment for the production of reinforced concrete ties (Hungary), excavators (Poland), etc.

Cooperative supply of the sister nations with complementary component assemblies and parts is developing particularly dynamically. Thus, heavy construction and road-building machinery manufactured in the USSR has gearings, Carvian shafts and driving axles from Poland, rotary-current axial engines from the GDR, and hydraulic drives and cooling units from the CSSR. The reciprocal supply of such complementary units will more than double between 1981 and 1985. Its share of the total exchange of products within the construction and road-building engineering industry (including machinery for municipal trade and industry) will amount to about 30 percent in 1985. According to the agreements, the USSR will supply four times more complementary units to CEMA countries between 1981 and 1985 than it did during the previous five-year-plan period.

## Bilateral and Multilateral Agreements

Like scientific technical cooperation, cooperation and specialization in the production of construction and road-building equipment are also based on long-term, bilateral and multilateral agreements (currently 14). For the purpose of rational utilization of the scientific technical potential of the sister nations, agreements have been concluded among these countries for the solution of particularly important individual problems. Research is proceeding, in part, within the framework of coordination centers and shared design offices, as well as through the activity of work-groups composed of specialists and established for specific tasks and time periods.

The USSR is carrying out, in bilateral and multilateral scientific technical cooperation with other socialist countries, a total of 53 projects in the field of machine construction. They concern, among other things, the development and production of:

- highly efficient equipment for the extraction, milling and grinding of natural stone (with Bulgaria)

~~modified high-pressure injection units, including such units as those with~~  
internal combustion engines, units for electrostatic actuation of color and  
lacquer as well as two-component media (with Bulgaria)  
--presses for the manufacture of ceramic tubing with a diameter of 150 to  
550mm and production lines for the manufacture of ceramic facing panels  
(with the GDR)  
--cranes on specialized frames with a lifting force of 160 and 250 tons and  
complex equipment for the manufacture of goods out of cellular concrete  
(with Poland and the SRR)  
--elevators for high-rise buildings (with the CSSR).

#### Achievement of Common Standards and Codes

As a result of the realization of joint plans for the years 1981 to 1985, 54 models of construction machinery and complete equipment, 9 types of complete parts as well as structural components and progressive technologies for mechanical processing, welding, and coloration of products by means of robots are being produced. Thirteen international standards are being developed for various types and models of construction and road-building machinery. The joint development of common codes is increasing not only for construction and road-building machinery but also for technological lines for the production of large-format, reinforced concrete sections for housing construction, equipment for utilizing household-waste, parts and components for excavators, cranes and elevators. Uniform methods for the determination and assessment of technical standards for machinery and equipment are being introduced, which is important for the evaluation of reciprocal supplies, the determination of their technical level and their ability to compete.

Special attention is also being given to the development of prospective capacity, with the goal of complete coverage of the needs of the CEEA countries for modern construction and roadbuilding equipment. New forms of cooperation and of deepening as well as unifying the research and production potential of the sister nations contribute to this end. Also worthy of mention is the increasing transition to direct relations between firms, design offices and other institutions.

(From the RWG-BULLETIN, condensed)

12620

CSO: 2300/422

'MARITSA-IZTOK' COMPLEX DESCRIBED

Sofia RUDNICHAR in Bulgarian 5, 12 Jul 84

[Article by Dimitur Dimitrov, Kiril Genov and Dino Dinev, special representatives of RUDNICHAR: "The Miracle Called 'Maritsa-Iztok'"; passages enclosed in slantlines printed in boldface]

[5 Jul 84 pp 1, 2]

[Text] Unquestionably our country reached one of the highest peaks during the 40 years it has been building socialism with the creation of the mighty "Maritsa-Iztok" [Maritsa-East] power base. Today 20.5 percent of Bulgarian electric power is produced here. And what is especially remarkable, it is produced from such low-calorie lignite that is used almost nowhere else in the world for this purpose. From it are produced also all the heating briquettes for the population, for which reason we can add to the quite popular and, for its time, entirely accurate identification of "Maritsa-Iztok" as the electric heart of the homeland the 100-percent correct identification, "and its main hearth."



## Things Not Many People Know

/The "Maritsa-Iztok" "miracle" did not come to pass in terra incognita. Knowledgeable people say that the first survey of the region dates from as early as 1847 and was made by the French explorer August (Vinenel). The first description of the coal reserves in the Maritsa Basin, however, was the accomplishment of the Austrian geologist Ferdinand von Hochstetter, who in 1869 conducted geological surveys in European Turkey and with his works on the geology of Bulgaria and map on the scale of 1:3,000,000 made the second (after the Frenchman Ami Boué) summary of the geology of the Bulgarian lands.

/The first mine in the Maritsa Basin was discovered by concession holders G. Nikolov and D. Vasilev who in 1896 obtained a permit to seek and extract coal in this region.

/In his book "Kafyavite Vuglishta v Bulgariya" [Brown Coal in Bulgaria], published in 1932 with a map on the scale of 1:126,000, the classic author in Bulgarian mining-engineering thought Engineer Georgi Konyarov made the first more detailed characterization of the Maritsa Basin, while in 1941-1942 a Todor Surchev from "Tvurditsa" and a few others of his enterprising competitors mined coal in a most primitive fashion near the village of Gradets (Sliven Okrug)./

But the necessary light for estimating the basin's reserves and judging their industrial significance was provided by the geologist Khristo Antonov's systematic geological and mining surveys and detailed geologic map made here after 1947.

Thus it was established that the Eastern Maritsa Basin with an area of about 230 sq km enclosed between the villages of Aprilovo, Risimanovo, Gledachevo, Kovachevo, Gradets, Medikarovo and Obruchishte had around 3.4 billion tons of reserves (the largest in the country), and on 16 June 1951 by Decree No 652 the Council of Ministers ordered the building of the "Maritsa-Iztok" DM [State Mines] with headquarters in the village of Troyanovo (Stara Zagora Okrug).

The Leningrad Design Institute GIPROSHAKHT [State Institute for the Planning of Mines] produced the plan for the first mine—"Troyanovo-1"—for the annual extraction of 10.3 million tons of coal, while the Dimitrovgrad branch of "Minstroy" [Mine Construction] Economic Trust on 3 March 1952 broke ground for its execution. A little later, with the participation also of our "Minproekt" [Mine Designing Institute], the plan was revised for a smaller capacity—8.6 million tons.

The first tons of coal from "Troyanovo-1" mine started the first 50-megawatt turbine of "Purva Komsomolska" [First Komsomol] TETs [Thermoelectric Power Plant] turning in 1960.

That is how "Maritsa-Iztok" was born.

And now, 30 years after ground-breaking, what is it like—this source and producer of the electric power the country needs so much?

Let us start with its mines, power plants and other production units.

/The "Maritsa-Iztok" Power Complex by right has a place in the popular and very useful initiative to acquaint tourists with the 100 most memorable sights in the country. And thousands of curious Bulgarians come here to see the power heart of the homeland. But can even the swiftest tourists in a visit of a few hours get to know the overall picture of "Maritsa-Iztok"? No, they can't. For everything here is large-scale. Both the distances and the sizes. Both the boldness and the effect. Both the concept and the results. That is why our story of the "Maritsa-Iztok" miracle, though the result of a visit of several days, likewise only skims the surface of socialist Bulgaria's first power pinnacle--its production elements and characteristics and, most of all, the toilers making up the multithousand work force of the "Maritsa-Iztok" SMEK [Economic Mining and Power Complex]. For actually, as our colleague Kozma Prutkov has said, nobody can set bounds to the boundless. . ./

### Heroic Feat!

As early as 7 am Rusi Danev, chief director of the "Maritsa-Iztok" SMEK, is in his office in the city of Radnevo where the administration of the complex is located. The team from the newspaper RUDNICHAR will take no more than 10 minutes of his time--we hurry to appointments in the mines and power plants, while he hurries to perform the scores of tasks there may be on the daily schedule of a chief director.

Uninvited guests are worse than the plague, but the tension and uneasiness which emanate from Rusi Danev's eyes are not due to us. He has assumed the management of the huge complex in a challenging, difficult period of its development and this is by no means an easy burden for his young shoulders and capabilities. How can he help being intense, disciplined and businesslike throughout the day--from early morning till late in the evening? Especially on a day like this--one of the not so infrequent days when every possible kind of "inspecting" commission and emissaries from various superior authorities flock to the enterprise and "are unable" to do their job without the direct participation of the chief director.

Rusi Danev "coped" speedily and resourcefully with our team, making available to us as partners his strong competent team--the chief specialists in coal extraction and power production Gencho Nikolov and Gencho Tarulov and Penka Ivanova and Zoya Deleva. From them we shall learn the main dimensions and indicators of the complex's production activity and fill our notebooks with facts and figures, with names, achievements and draft plans. This way it will be easy later on and we shall save the people we chat with in future the inconvenience of explaining the basic concepts about "Maritsa-Iztok" to us as ignoramuses.

When it becomes clear that we are by now crammed with information, time comes to travel. The word is not random here, for the tour of just one mine is real travel.

By design we set out first of all for the "Trojanovo-3" mine. Why there first? Because "Trojanovo-3" is the beautiful present and in large measure the sure

future of "Maritsa-Iztok"--as concept of strip coal mining and as consistent realization thereof.

/Engineer Stoyan Stoyanov, director of the "Trojanovo-3" mine, in front of a large diagrammatic map of the entire complex. Persuasive--with his voice and with the precision of his wordings. He is an old hand, as they say, in this life. Already getting on in years, but still utterly single-minded. Here is a summary of the thoughts he expounded to us.

/"We have to take our hats off to all those who got the idea of creating 'Maritsa-Iztok' and put it into effect--in the face of so many obstructions, so much skepticism and difficulties of every possible kind besides. Building such a mighty power base on this--we would say--treacherous raw material is audacity, it is a heroic feat! Before then no state in the world had ventured to tie its prospects for development in with similar power and raw-materials resources. Yet the Bulgarian specialists (mining engineers, power workers, economists) not only dared to propose to the party and government this uniquely right course for the country, but by their brilliant deeds also vindicated the confidence placed in them. Nor must we forget that the 'Maritsa-Iztok' idea and plan was born at a time when . . . it could not be born. Why, this happened only a few years after the red-letter Ninth of September 1944. Recollect what Bulgaria was like then, what it was capable of and what it had available. True, it had strong support in the Soviet experience and the direct assistance of Soviet specialists, but even so in this tremendous undertaking you have to rely first and foremost on your own powers, don't you?

/"It is easy now for us to find flaws in the technical and technological decisions of that time, to look at some of them with a certain derision. But we must never forget the scientific and technical level and capabilities of that time. What is more important is that the development of 'Maritsa-Iztok' proceeded invariably 'on the crest of the wave,' that all modifications in the original design were made in the timeliest fashion in keeping with the achievements of scientific and technical progress. This is the way it was with the introduction of conveyor-type haulage of coal and stripped mass and with the employment of the scheme for the burning of coal without prior drying, and with the decision to create two large-scale mines (instead of the originally targeted seven). All practical, efficient, bold modifications. The pioneering, innovative spirit continues to reign at 'Maritsa-Iztok.'"/

We, too, solemnly subscribe to this "eulogy" of the creators and toilers of "Maritsa-Iztok"; every Bulgarian can--with pride, with admiration and, we would say, with enthusiasm. For it is precisely such feelings that grip one on getting to know the facts about "Maritsa-Iztok" and all the more so when, from the height at which the control point is set up, one takes in with a glance /the panorama of the complex/.

If we face northwards, in front of us is the mine. Behind and to the left are the outside spoil heaps. On these are heaped most of the layers of earth covering the coal deposit. The rest is moved closer--to inside spoil heaps. We see row after row of exposed horizons of the mine; huge rotary excavators are digging up the earth which hundreds of millions of years ago covered the

vegetative mass and created the conditions for it to turn into coal. The excavated earth is dumped onto rubber conveyor belts and these transport it to other huge excavators—continuous-bucket loaders, which with their wing belts dump it in a specified spoil-heap row. The most remote outside spoil heap of the "Trojanovo-3" mine is 15 km away to the southeast and is near the village of Mednikarovo. In the haze of the warm summer day the rubber conveyor belt moving into the distance (it is so to speak "endless") and the spoil heap itself are hardly visible.

Row after row of stripping, horizon after horizon until the coal stratum is reached. Here extractive combines (excavator plus rubber conveyor belt) have taken over. The excavators are rotary, too, which means that their operating element (the excavating "shovels") is a large wheel, situated along the edge of which are teeth-blades and reticular buckets to take up the coal or earth that is "bitten off." The coal is dispatched via conveyor belt to open-air stockpiles near the power stations.

This, actually, is the entire coal-extraction technology at the "Trojanovo-3" mine in a nutshell. It is the same at both the "Trojanovo-1" and the "Trojanovo-Sever" [Trojanovo-North] mine (its designation hitherto was "Trojanovo-2"). Only here and there does rail haulage still continue to be used.

From the control point all this can be clearly seen. A little to the northwest peeking out from the low place behind the hill are the stacks of the "Purva Komsomolska" TETs—the veteran plant of the complex. From behind the same hill that has been left like a dividing pillar there still protrude some of the excavators along the exposed horizons of the "Trojanovo-1" mine. In a little while the pillar will disappear since the two mines are going to be consolidated into the "Trojanovo-Yug" [Trojanovo-South] mine. Far away to the north looming in the haze are elements of the "Trojanovo-Sever" mine and "Maritsa-Iztok-2" power plant, while to the east right alongside "Trojanovo-3" is the Dima Dichev TETs, the latest and most modern electric power plant in the complex.

It is more than 30 km from Radnevo to "Trojanovo-3" and the same again from Radnevo to the "Maritsa-Iztok-2" mine. These are the commonest measurements of distance in the complex. But what makes the most powerful impression are the measurements we see directly before us.

/The RS-2000 excavator is something very big—a multiton edifice with wings outspread for scores of meters to the sides, terminating on the one side in the excavator's rotor and on the other in a dumping station. And here is such an RS-2000 in the bottom of the mine at the end of the stripped coal face which begins almost at the control point and touches the pillar-boundary with the "Trojanovo-1" mine on the north. The mass of the excavator is dwarfed by the distance, the excavator looking like a child's rather large plaything. Similar "playthings" are the excavators and continuous-bucket loaders perched along the stripped horizons.

/But what are these things called rubber conveyor belts? A belt is a belt 1.8 m wide and 1 km long (turning in a double length, bonded in a circle). But to drive the belt with all its heavy load requires powerful motors, large driving

stations, beds for the belt--countless running rollers turning at the rate of the belt's motion, and an overall metal structure of individual elements that can move along in keeping with the advance of the stripped or extractive face, doesn't it? And such "rubber conveyor belts"--apparently simple, but actually capricious installations--cross the mine in almost all directions in a complex tangle. And along them move the flows of coal and earth--so precipitously that you wonder where it is all going./

Most likely we shall evoke a wry smile from somebody (there is no lack of skeptics and envious people in this world), but we cannot help exclaiming once more in writing these lines now as we did then during our visit to the "Troyanovo-3" mine: "This is a model mine! Bravo, comrades of 'Maritsa-Iztok' and 'Trayanovo-3!'" Even stronger words can be uttered, but they will all boil down to the summarization already made by Engineer Stoyan Stoyanov that "Maritsa-Iztok" symbolizes a heroic feat! And no skeptic can prove, even with the most ingeniously chosen facts and argument, that this is not so. Let it be known!

#### Attempt at Feature Story and Report

/Iliya Tonev, excavator operator of the RS-200 of RTNK [expansion unknown] No 1, is chairman of the sector trade-union committee and member of the complex's trade-union committee of the "Maritsa-Iztok" SMEK. He is from a nearby village; he is not 40 years old, but he has already "given" 17 of these years to "Maritsa-Iztok." Full of life, quick, cheerful, eloquent. He lives in Radnevo with his dear, ostensibly strict wife and two charming children in a two-room apartment. He knows how to respect others and they repay him with the same. "Maritsa-Iztok" has its holder of the title of "Hero of Socialist Labor"--all strong people, capable of a great deal. Iliya is not among them. Fate does not give everybody the opportunity to prove himself to the fullest as a person, as an individual, as a worker. "I have a shortcoming," Iliya will say with characteristic irony about himself. "I am very quick to talk. And in just a second, in two words I can ruin everything I've built up over the years." Nevertheless he is a fortunate person--because he has such a noble, optimistic character, because low spirits with him are as fleeting as a summer shower, because in childlike fashion he can take irrepressible pleasure in both small and very great success./

We made the trip to the excavator of RTNK No 1 by the small "Balkan" bus, driven masterfully by a blond, cheerful young man, Dincho Todorov. We pass under one and under another rubber conveyor belt, alongside transfer points and operational trucks of the sectors and before long come to a level place. Underneath us is the coal stratum; we are moving over it --a field 3 x 6 km in dimension. The bulldozers have cleaned it up from end to end and have removed every clod. We get out of the bus, set foot on the coal and scrutinize it with curiosity. What kind of coal is it? Why, it is almost pure wood, apparently even decayed.

"The exposed field that you see contains coal with which the 'Dimo Dichev' TETs can operate for a year and a half," explains Director Stoyan Stoyanov.

[Text continues after chart]

## EQUIPMENT, CAPACITY, TARGETS

### In operation at "Trojanovo-1" mine at present--

In stripping: 3 DS-1120 tracklaying excavators, 1 DO-800,  
1 K-800 which also extracts coal "part-time,"  
1 RS-1200 rotary excavator;

In extraction: 1 RS-560 excavator, 1 RS-400, 4 RS-315;

At spoil heaps: 5 AS-1600 continuous-bucket loaders,  
1 AS-1120;

In haulage: electric locomotives, dump cars, gondolas;

Plan for 1984: 7,350,000 tons of coal and 27,000,000 cu m  
of stripping.

### At "Trojanovo-Sever" mine--

In stripping: 9 RS-1200 excavators and 2 RS-2000;

In extraction: 1 RS-1200 excavator, 1 RS-710, 1 RS-400;

At spoil heaps: 7 continuous-bucket loaders: AS-1200,  
AS-1600, AS-6300 and ZD 2100;

Combined haulage: rail and rubber conveyor belt;

Plan for year: 38,700,000 cu m of stripping and 8,200,000  
tons of coal.

### At "Trojanovo-3" mine--

In stripping: 6 RS-2000 excavators and 1 RS-1200;

In extraction: 1 RS-1200 excavator and 2 RS-470;

At spoil heaps: 2 AR-500 continuous-bucket loaders and  
3 AS-6300;

In haulage: about 50 km rubber conveyor belts, perhaps the  
longest in the world for its type size;

Plan for year: 9,020,000 tons of coal as against 8,124,000  
tons last year and 45,000,000 cu m of strip-  
ping as against 48,195,000 in 1983.

In 20 years (1964-1984) the miners of the "Trojanovo-3" mine have dug  
58 million tons of coal and have excavated, hauled away and dumped  
371 million cu m of earth.

[Chart continued on next page]

The numerical designation, for example, of the RS-2000 rotary excavator denotes an hourly productivity of 2000 cu m of mined mass. This productivity also determines the digits of the other types of machinery.

Ostensibly incidentally, Iliya Tonev hinted, "Why, that is why they have put the spurs to us now to do more stripping and have set us last year's records as a target." We wonder whether this was not one of those "hasty" words that later on muddle up this man's life.

The dispute is not only between Iliya and the direction though, and there is no doubt that after it is brought to an end, new remarkable achievements of the collective of RTNK No 1 (or the "Georgi Dimitrov" brigade) with Engineer Prodan Bekyarov as their chief will be brought about. For when the chairman of the mine trade-union committee Dimitur Stankov, smilingly listening to the lightning-like banter, at our request made a kind of unofficial rating of the individual collectives, he began with the "Georgi Dimitrov" brigade, "With a sturdy collective like this there may be wrangling, but first and foremost it can be counted on."

And Iliya is already worked up over something else. Such a great "commission" has come to the coal-face and the shift brigadier, it seems, has got somewhat flustered. He is having trouble in succeeding in making the necessary maneuver with the giant excavator. He keeps marking time, repeating his moves. Iliya wonders how to help so that the "Georgi Dimitrov" brigade will not be discredited; he dashes to the excavator, shouts something, gesticulates strenuously, but who can understand him from the height where the control cab of the excavator is situated?

Don't fret, Iliya. Your mate up there will get straightened out. Look, the maneuver has succeeded. . . . And a deep stream of earth is gushing along the conveyor belt. The excavator operator, who a short while before was confused, is probably overloading it in his zeal. "Come on, that's the way! No empty space!" Iliya stamps his foot and a smile begins to glow at once on his face. That's the way he is. . . .

He has been a trade-union worker for a good many years, you know (he was, so to speak, "born" for this walk of life) and Iliya will not fail to introduce to us two of the women in the brigade, without whom their, on the whole, male outfit would feel at least uncomfortable.

Round-faced and with a sunny smile, operator Zlatka Slavova nimbly manipulated various buttons on the panel in front of her; she barely lets the telephone receiver drop from her ear and does not stop receiving and passing on various items of information and commands. Her dialogues with the excavator operators, with the rubber-conveyor-belt mechanics, with the mine dispatcher are like tongue-twisters. For 18 years now Zlatka's sweet-voiced, cheerfully insistent "warbling" has been a stimulus to good achievements and at least little by little revives the strenuous rhythm of the daily grind in the sector. For 16 years the outstanding machine operator of station 136, Dinka Todorova, has been

joining in harmoniously with Zlatka--steadfast at her post, attentive in her womanly way to the huge rubber-conveyor-belt driving station entrusted to her.

Iliya will also request that we photograph the two women and will take advantage of the meeting to explain business matters--regarding leaves and rest-and-recreation cards. . .

/Over 1800 people are employed at the "Trojanovo-3" mine. May the foregoing profiles be accepted as an attempt to sketch the picture, the work routine, the frame of mind of all the hard workers at the mine and, most of all, as sincere homage to the dedication of these valiant people./

To be continued.

[12 Jul 84 pp 1, 3]

[Text] The heavy turbines of the Eastern Maritsa thermal power plants began to turn simultaneously with the huge rotors of the giant excavators.

First of all, those of the pioneer "Purva Komsomolska" TETs which began to operate at its full capacity of 500 megawatts 20 years ago.

Five years later the 600-megawatt "Maritsa-Iztok-2" TETs paralleled it.

The third, 840-megawatt Eastern Maritsa TETs, named after Dimo Dichev, would be commissioned considerably later (in 1981), but by way of compensation the most up-to-date technical and technological solutions and, above all, a superb achievement of Bulgarian innovative thought--the scheme for direct combustion of low-calorie, high-ash and moist coal--would find application in it.

## Rebirth

/We must mention once more that for this technology, which has made the previously indispensable drying plants and stockpiles useless, all of the inventor staff, headed up by Honored Worker in Technology, Corresponding Member of the Bulgarian Academy of Sciences, Engineer Nikola Todoriev, would in 1980 be awarded the title of Dimitrov Prize Laureate./

Dismounted from the saddle of tradition, our scientific and engineering thought aggressively continues its innovative achievement in the area of energetics.

In keeping with its strategy and, of course, with the blessings and by order of the competent state authorities, the first two Eastern Maritsa power plants have to be born anew. The "Maritsa-Iztok-2" TETs is now in the toils of these birth pangs.

/Engineer Kuzma Kuzmanov, director of the "Maritsa-Iztok-2" TETs. Once more he is staying late at the plant, but his nerves are obviously still steady. He chats calmly with us, even at a time when, as the saying goes, all trains have been missed. His thoughts and reasoning are the fruit of many-sided experience acquired in various industrial enterprises of national importance and, chiefly, from the strenuous job of chief executive of this crucial power plant for the complex. The essence of his explanations is as follows./

"It has been said that you can't wear two hats and this is unquestionably true, but we have to do three things simultaneously: reconstruction, expansion and production.

"Beginning last year, our power plant shifted to direct combustion of coal and is already 'used' to the new scheme. Three of its 150-megawatt power units are now 'under steam' and at peak capacity. The fourth is under reconstruction.

"Some characterize the reconstruction done here as unique, the only reconstruction of its kind. This is probably so, for it is by no means a simple or easy job, for example, to take down the entire boiler shop in order to install new fuel systems, dust extractors and electric filters and to eliminate even the slightest flaws throughout the chain of engineering and technology.

"This entire period of modifications must come to an end while the fine weather lasts since during the winter the plant must be in operation at its full capacity without any bugs.

"And a year from its expansion by two 210-megawatt power units, the 'Maritsa-Iztok-2' TETs must constitute a capacity of 1020 megawatts. Thus it will become our second-ranking thermal power plant in capacity after the Varna TETs. After this new expansion it will have one 440-megawatt power unit. That is why there is no drop, as we power engineers say, in the tension at which we are working, for nobody can rescind the target of targets, namely, that this year the reborn plant must produce 2.4 billion kilowatt-hours of electric power."

Engineer Kuzmanov gave a very high appraisal of the exceptional character of what "his people" and the men from "Energoremont" are doing now at the power plant. Here, too, the estimation, "This is a heroic feat!," is most fitting. In corroboration of this we venture to cite the words spoken by the chairman of "Energetika" [Power Supply] Corporation, Dimitur Iliev, on the occasion of Power Engineering Day.

/"For us the reconstruction of the 'Maritsa-Iztok-2' TETs has proved to be an exceptional school for accumulating experience and confidence in our powers and for proving our abilities to organize and successfully carry out an undertaking so exceptional in scale and so unprecedented. With pride we must say that our scientists, designers, constructors, repairmen, builders and supervisors from 'Tekhenergo,' 'Energoproekt' and 'Maritsa-Iztok' SMEK won high prestige here. We are convinced that they will uphold these positions in the future as well during the reconstruction of other capacities in the 'Maritsa-Iztok' Complex at the 'Republika' TETs and the 'Maritsa-Iztok-3' TETs, as well as at the

international level, in other countries where the interest in Bulgarian experience in utilizing low-quality coal is becoming increasingly greater."/

The credit for keeping the turbines of the "Maritsa-Iztok-2" TETs turning in spite of everything goes to the power workers who are totally dedicated to their responsible duty. Both those from the Coal-Feeding Shop—Delcho Milev, chief; from the repair brigades—Ivan Kolev and Dimitur Shikov, chiefs; and from Nedyalko Slavov's shift in the boiler shop. Also inestimable is the share attributable to master welder Vasil Pilev, to section leader Dimitur Petrov of Heating Surfaces, to the commander of the raw coal "feeders" Georgi Enev, to the master workmen from the repair brigade of mechanic Ivan Popov from the turbine shop, and to the capable and dexterous fellows from "Kipa."

/The power workers of the "Maritsa-Iztok-2" TETs rightfully also have things that are downright enviable. They are to be envied, first of all, for the large artificial lake, an entire sea, filled to the brim with silver carp, carp, rudd and other fish. We took a look at the fishing industry of the power plant and we earnestly assert that the "ponds" of brigadier Rusi Kalchev, a veteran telephone technician at the TETs, veritably boil and seethe with large, naked (which means scaleless) carp. A 120-ton catch was reported last year, which was not one of the best years. The fish was sold to our people for only 1 lev per kilogram, and tomatoes from our own vegetable garden for 20 stotinkas. Three and a half leva was paid per kilogram "live weight" for lambs "produced" on the power plant's sheep farm. In this way the price of food in the TETs dining room is over 30 percent cheaper. The power workers of TETs-2 look after the complex's water recreational facilities and use them "on a privileged basis." And the near future promises new delights. It is quite logical with the expansion of the power plant to build a modern medical and personal-services wing with baths, a dining room, stores, shops, a first-aid station, etc. And regarding the marina people will say, "Tell its beauty and salutariness!"/

#### Main Electromechanical Backup

TsRB [tsentralna remontna baza; central repair base]. . . A more modest name for the plant where the mining equipment, unique to this country, of the "Maritsa-Iztok" SMEK is repaired and enough spare parts for it are produced could hardly be contrived. Only one workshop however, and there are six basic shops; hence something much more than the similarly named TsRB's of many of our mining enterprises.

Marko Georgiev, chairman of the plant trade-union committee, acquainted us with the history and character of the Radnevo TsRB and with its achievements, problems and people:

"Beginning of construction: 1963.

"Official opening: 1966.

"Manual laborers, engineering and technical workers, administrative and servicing personnel: 1900.

"Repair work is done on excavators, continuous-bucket loaders, electric locomotives, cars. . .

"Spare parts are produced to meet 60 percent of the complex's needs. Very successful air swept unit mills (mill plus fan simultaneously) for TETs's have been manufactured for 7-8 years. The foundry has achieved as much as 4900 tons of steel castings a year. Many other enterprises of 'Energetika' Corporation are also served on a contractual basis.

"And since in principle it was still not intended that the base should meet all the needs of the complex, now that the Eastern Maritsa power plants are attached to it, the burden is becoming unendurable. Therefore the repairbase of the 'Maritsa-Iztok' SMEK must be expanded.

"We have recently finished construction of an oxygen shop. We have also broken ground for the construction of a second basic repair shop, but we must continue right away with the second and so on; otherwise we are lost," fretted the chairman of the trade-union committee, who conducted us around the base and showed us what was what and who their greatest master workmen were. He showed us also the new modern parking lot for the personal cars of workers at the base, even though anybody can see it without its being pointed out. Near the parking lot a center for the technical servicing of the more than 500 cars will be established so that the talent of the excellent motor mechanics of the base will not go to waste, or the personnel lose time or enrich the self-styled experts who are in business for themselves.

/In keeping with the motto, "A sound mind in a sound body!," a swimming pool and tennis court will be built at the TsRB, and there are now volleyball courts and soccer fields (na malki vrati) [literally, of small goals, i.e., miniature].

/And the abandoned school in the hamlet of Borushtitsa in the Tryavna Mountains has been turned into a marvelous facility for winter sports and short leaves for the personnel who repair and restore to a second full-fledged life the powerful and high-duty equipment of "Maritsa-Iztok" SMEK.

#### Increasingly More Settled, Richer Way of Life

Radnevo--the capital of the "Maritsa-Iztok" SMEK, as it is called in the language of the power workers, already parallels the dynamic of development of the complex, but does not equal its growth. As almost everywhere in our country, the okrug city, which also wants to become larger, competes with it. An old settlement, but a new little city with only a 20-year history, which already has almost everything it needs for the residents of Radnevo to feel like modern citizens so long as everything is stirring and full of life. The prospect of the population's reaching 50,000 is quite realistic.

According to the comprehensive program for the socioeconomic development of the "Maritsa-Iztok" SMEK, 2700 apartments will be built for miners and power workers in Radnevo, Gulubovo and Topolovgrad during this five-year plan and the next. This will be a good solution of the housing problem for the complex's 17,000-strong work force who now have a housing stock of about 4400 apartments and 10 dormitories with over 1300 beds.

/The secretary of the complex's trade-union committee, Yordan Momakov, informed us of the offensive, initiated by the combine and trade-union leadership of the "Maritsa-Iztok" SMEK and by the leadership of its units, to augment the physical facilities for the rest and recreation of miners and power workers: /

--Last year construction was completed at the bathing resort of Starozagorski Bani of the first stage of a rest home which, when building is finished up, will have over 200 beds and will become the complex's preventorium.

--The rest home at Nesebur (with accommodations now for 300) will be reconstructed, expanded and equipped for year-round use with the introduction of mud therapy.

--The building of a preventorium at the famous bathing resort of Pavel Banya has been authorized and will be carried out.

--It has been settled that construction of a seaside rest home with accommodations for 30 will begin at Kiten in the southern Black Sea area.

--Facilities for short-term leaves and sports--a preventorium, indoor and outdoor swimming pool (the outdoor pool to Olympic dimension)--will take shape in the locality of Topolyane, which is only 4 km away from Radnevo, with a picturesque forest and warm (48°) water spouting from a borehole.

--Construction of the "Paisiy" winter recreational sport facilities in the Shipka-Tryavna Mountains has begun.

--The water recreational and sport facilities at the "Maritsa-Iztok-2" lake will be improved.

--The complex's "de luxe residence" in the midst of the pine forest above the village of Glavan, situated on the northwestern slopes of the Sakar Mountains, is finished and is being used to the fullest extent for holding further-training courses, meetings for the exchange of professional experience and other collective events.

--The labor force of "Purva Komsomolska" TETs and the Briquette Factory will have their facility for short-term leaves in the locality of Khaydushko Kladenche.

--Bungalows at the resort of Batak and huts at Michurin continue to be available and will be increased in number.

And this means that the way of life of miners and power workers from the mainstay of our thermal power supply--the "Maritsa-Iztok" SMEK--will increasingly become richer, more settled, more beautiful.

Behind the new Central Palace of Culture (we specify central because palaces of culture were built--and earlier at that--also in the "peripheral" centers of the basin--Troyanovo, Gulubovo and Kovachevo) in Radnevo, tucked away all by itself in the midst of the new encirclement of multistoried structures, is the

house where the poet Geo Milev was born--Milev, who in presenting that "Bloody Offering to the Gods" in September 1923, with unique poetic quality and civic emotion said:

Everything written by philosophers, poets--  
Will come true!  
--Without God! without master!  
September will be May.  
Human life  
Will be an endless ascent  
--Upwards! Upwards!  
The earth will be a paradise--  
Yes, it will be!

/We, too, want to repeat, "Yes, it will be!", for we have seen and felt this ascent of human life everywhere in this region of golden wheat and the brilliant electric sun of the homeland. And although our reporting may look quite voluminous, we realize that we have only touched the magnitude of the scope with which the mainstay of our thermoelectric power supply--"Maritsa-Iztok," born under the lucky star of the Ninth of September Socialist Revolution, confirms its reputation and fame./

6474

CSO: 2200/149

GERMAN DEMOCRATIC REPUBLIC

DM 40 MILLION EURO CREDIT TO FOREIGN TRADE ORGANIZATION

Duesseldorf HANDELSBLATT in German 2 Jul 84 p 1

[Text] cmk BERLIN. An international banking consortium will extend a Euro credit of more than DM 40 million to the Intrac Trade Company (Intrac Handelsgesellschaft mbH) of the GDR. The Euro credit had even been over-subscribed at a value of DM 45 million.

Intrac is the only GDR foreign trade organization other than the DABA (GDR foreign trade bank) and the German Commercial Bank (GDR) which can receive. Among other activities, Intrac deals in the import and export of crude oil and crude oil products, nonferrous metals and precious metals. The GDR foreign trade organization has a full 20 percent share in sales to the Federal Republic of Germany and West Berlin.

The credit will have a period of two years and will be made available in two portions. Fifty percent of the first portion is due at the end of 12 months; fifty percent repayment of the second portion is to begin at the end of 18 months. The interest rate on the credit is fixed at 1 percent above the London interbank offered rate, based on the rate for each six-month period.

The consortium is composed of nine banks, and is managed by a group of banks whose members are the Arab-African Bank of New York, the Fuji Bank AG (Switzerland), the Bank for Credit and Foreign Trade AG of Zurich and the Rhein-Saar-Lux AG.

12644

CSO: 2300/565

MINISTER INTERESTED IN FLUE GAS DESULFURIZATION EQUIPMENT

Munich SUEDEDEUTSCHE ZEITUNG in German 30 Jun 84 p 5

[Article by P. Schmitt]

[Text] SCHWANDORF (own report)--The minister for the environment of the GDR, Hans Reichelt, is interested in the processes developed in the Federal Republic of Germany for the desulfurization of flue gases in brown coal-fired power plants. On the invitation of his Bavarian opposite number, Alfred Dick, he visited the Schwandorf power plant of Bayernwerk AG after the conclusion of the multilateral conference on environmental protection held in Munich and sponsored by the UN Economic Commission for Europe. Various detoxification systems are currently being tested at the brown coal-fired power plant which achieved an output of 700 megawatts ten years ago, but whose capacity in the meantime has been reduced to 500 megawatts out of concern for the environment and for reasons of profitability.

In addition to the practice of adding crushed limestone to the coal, which is also followed in other power plants, experiments are being made at the Schwandorf plant with wet desulfurization of flue gas. This method was previously only successful with hard coal. Before the end of this year a large-scale plant will be set up to use the fluidized-bed process which is supposed to reduce harmful emissions to such an extent that the new stipulations of the large-scale coal-fired plant ordinance can be met.

Wet desulfurization experiments and the fluidized-bed process met with particular interest on the part of the GDR minister for the environment. Reichelt, who is the deputy chairman of the Council of Ministers of the GDR, referred to the brown coal-fired plant at Schwandorf as a major research laboratory. If the conference in Munich is to be successful, Reichelt said, developments such as the Schwandorf plant must be pushed forward. The minister for the environment indicated that the GDR was interested in importing suitable plants, adding that the admixture process would be problematic in some of the larger power plants in the GDR, because the quantities of limestone required would be too large.

Reichelt added that the GDR is interested in desulfurization systems which leave behind reusable materials and not waste. Dick stated that nothing stood in the way of the export to the GDR of the demonstration system for wet desulfurization promoted by his ministry upon conclusion of the current series of experiments.

12644

CSO: 2300/565

TECHNOLOGY FOR COAL DUST GASIFICATION INTRODUCED

East Berlin NEUES DEUTSCHLAND in German 4 Jul 84 p 3

[Text] Large-Scale Coal Dust Gasification Experiments Started Ahead of Schedule / Goal to Exceed 900,000 Cubic Metres of Gas Daily / Contribution Toward Realizing Economic Strategy

Dear Comrade Erich Honecker,

On the occasion of the start of coal dust gasification experiments ahead of schedule in the large-scale experimental plant designed to test the new gasification process, we would like to convey to you our warmest greetings in the name of all communists and employees involved in the project at the Schwarze Pumpe [Black Pump] Gas Combine, as well as those cooperating with us.

We began gasification experiments using brown coal dust on June 28, 1984, after intensive preparatory work on this new coal gasification process which is of national economic importance. Successful completion of these experiments in honor of the 35th anniversary of the GDR will be an obligation for us to move ahead at high speed and with a high degree of reliability with the comprehensive testing of research results.

Your directives given at the 7th Central Committee Congress and the Berlin Bezirk Delegates' Conference of our party, as well as the resolutions of the 8th Central Committee Congress, will be the basis for accelerating scientific research aimed at attaining new levels of quality in the upgrading of brown coal, and its rapid application in production. We are concentrating on the intensification of the existing basic capital as well as on the development of new processes for coal gasification, coal liquefaction and the production of superhard coke from brown coal.

With the start of coal dust gasification in the large-scale experimental plant, and after successful tests, we have set a goal of processing up to 720 metric tons of brown coal dust to yield over 900,000 cubic metres of gas, thereby beginning the decisive phase in the verification of a first-rate scientific and technological achievement under industrial conditions.

A new technology of worldwide significance was developed, the purpose of which is to make coal high in inerts with a high ash and salt content, which in the

past has been difficult to utilize, economical to use and to significantly upgrade it. After successful testing, this process is to be used as the basis for the production of synthesis gas from domestic raw coal for further chemical processing. In developing this technology we are simultaneously realizing an important task in the strengthening of the economic potential of the socialist group of nations as stipulated in the declaration of the Moscow advisory group for the CEMA countries.

Basic research to date, primarily at the Freiberg Fuels Institute, the research center of the Gas Combine, has led to promising developments in close cooperation with Soviet partners. The newly developed equipment and plants, products exclusively of GDR industry, passed their initial check-out during the functional test and the hot test using natural gas. In the course of the development of the process, in which 350 researchers, technicians and design engineers participated, 90 patents were either issued or applied for.

In the coal dust gasification phase now beginning, we researchers, engine operators and maintenance personnel, under the guidance of our party organization, will devote all of our energy to ensuring the success of this decisive experimental phase. Our goal is to be able to show our party leadership and our government by the end of 1985, in fulfillment of the party resolutions, that this gasification process is of value to our national economy.

We want this to be our contribution toward successful implementation of the economic strategy of our party and toward further establishment of the energy and raw materials base of our republic.

We wish you personally, and the leaders of our party, the best of health and continued energy in the further successful implementation of the resolutions of the 10th Party Congress.

With socialist greetings in the name of the commissioning collective.

12644

CSO: 2300/565

MINISTER EVALUATES '83, '84 INDUSTRY PERFORMANCE

Budapest PENZUGYI SZEMLE in Hungarian No 6, Jun 84 pp 403-413

[Article based on a speech by Dr Laszlo Kapolyi, minister of industry, at a recent conference of enterprise directors: "Our Economic Policy--More Efficient Industrial Development"]

[Text] In 1983, industry contributed significantly toward the fulfillment of our economic policy's central objectives: toward the maintenance or improvement of our solvency, and of our living standard and living conditions as well.

For industry's development, 1983 was a critical year. It is common knowledge that for industry the national economic plan had set stepped-up tasks considering the conditions and possibilities, and that the solution of these tasks was hampered by difficulties such as the following:

- Further forced curtailment of import;
- Further narrowing of investment possibilities;
- Continuing decline of available manpower;
- Worsening international economic conditions;
- Other restrictions on the enterprises' economic activity.

In spite of the difficulties, industry on the whole fulfilled the lower limits of its 1983 plan targets, and its performance was better in every respect than in 1982.

Can we be satisfied with the achieved results?

I think that the overall results achieved in industry are commendable, even if this general performance masks lower performances in some industries than what could be expected. The output in mining and metallurgy, for example, was lower than in 1982. This can be explained partially by the decline in demand, and it partially ties in with various unforeseen production dropouts (for example, the breakdown of the No II unit in the Danube Iron Works). But the decline in volume was not uniform even within metallurgy itself: in ferrous metallurgy the rate of decline was slower than in nonferrous metallurgy, while in aluminum metallurgy the volume even increased over 1972 [sic].

The aspect of engineering's development in 1983 was twofold: on the one hand, its production exceeded the 1982 volume, even though only to a minimal extent

(by 0.6 percent); on the other hand, it fell far short of the 3.2-percent increase that the national economic plan had called for. A role in this was played by the fact that productivity in engineering rose at the same rate as in industry in general, whereas it should have risen at a significantly faster rate.

After two oil price shocks, the national economy is now experiencing a period of technology price shock. Engineering must assume a key role in our suitable response to the technological challenge. From this point of view, then, engineering's development is of great importance within the industry itself: how will it be able to fulfill the role of the engine in national economic growth.

Change of the product structure was not fast enough. For a proper response to the technological challenge, we should have appeared in the markets with substantially more products that were new and modern.

The supplier industries' slower development than what would have been desirable, the problems of cooperation, and the lack of entrepreneurial skill were factors that played a significant role in engineering's relative lag. On the other hand, it is gratifying that production in the electric power industry, the chemical industry and light industry increased over the preceding year.

The most significant among industry's 1983 tasks was the expansion of export. The nonruble-denominated export of industrial products increased at a faster rate than had been planned. Industrial activity significantly improved the national economy's external equilibrium in 1983, because the expanding export was achieved with unchanged import. In comparison with 1982, the surplus in commodity trade denominated in hard currency improved by 274 million dollars. But nearly half of the 9-percent increase of export stemmed from a rise in the export of petroleum products; and the export of engineering products showed an absolute decline, instead of the planned increase. The dollar earnings from export rose in the chemical, the aluminum and the building materials industries and light industry; but they declined in ferrous metallurgy and engineering. The prices of industrial exports calculated in dollars generally declined, and the export price index fell 9 percent on average.

Trade with the socialist countries continued to expand; the growth rate of export was slightly higher than the growth rate of import. On the whole, industrial export approximated the planned volume. Within it, some industries (metallurgy, and the chemical industry) exported more than had been planned, occasionally to offset socialist import that replaced hard-currency import; in other industries (engineering, light industry) there were shortfalls in specific performances. The trade deficit showed a slight further increase.

When evaluating industrial activity in 1983, we must bear in mind that the work force's sharp decline in industry continued, and in some places the manpower shortage jeopardized even the basic production processes. The rate of the work force's decline was especially fast in metallurgy, engineering, and light industry. In industry as a whole, employment dropped by about 34,000. But productivity, based on per capita output, rose by 3.1 percent. It is favorable that productivity rose in all major industries, with the exception of mining. However, an even higher rise in labor productivity would have been

necessary for the fulfillment of the stepped-up tasks. Numerous central measures were introduced to relieve the stresses that arose in manpower management or to ensure the fulfillment of certain preferential tasks, and they improved the situation somewhat.

Although shortages of materials and parts in 1983 hampered production less than they had in 1982, the bottlenecks in the supply of materials and parts not only disrupted fulfillment of the production volumes but had an adverse effect also on technological discipline, organization, and the fulfillment of export tasks. Problems arose and there were faults to be found also last year in cooperation among enterprises: violations of supply discipline caused the enterprises losses in many instances, the proportion of contract violations was relatively high, weaknesses in capacity utilization were evident in many areas, and occasionally cases of quality deterioration also were encountered.

In 1983, industry perceptibly reduced its specific consumption of materials and energy (the latter by 2 percent). To a large extent, these reductions can be attributed to modern management.

Although the 1983 plan called for a substantial curtailment of investment, in the real processes this curtailment was not fully achieved. This trend manifested itself in both enterprise investment and state investment. In spite of this, industry solved a substantially larger production task with a much lower volume of investment than before. And it should be noted that the higher-than-planned value of investment includes also the higher interest rates.

#### 1984 Tasks

From a comparison of the enterprises' 1984 plans and the 1984 national economic plan's targets, the points of stress that must be resolved can be identified as follows:

The enterprises are planning to increase their production by 2.7 percent, but the national economic plan calls for 1.8-percent growth.

According to the summarized enterprise plans, the growth rate of nonruble-denominated export is 5.6 percent, as compared with the 8.1 percent targeted in the national economic plan. This creates a problem particularly because the enterprise plans are influenced also by the agreements to export that have already been concluded with about 100 enterprises and 40 cooperatives.

The growth rate of ruble-denominated export is 4.7 percent according to the enterprise plans, but the national economic plan calls for a growth rate of 6.1 percent.

A comparison of the figures shows that the enterprise plans anticipate a nearly 2-percent growth of the domestic market also in 1984, in the hope that they will be able to best achieve their profitability in this market. This assumption of the enterprises, however, is probably not realistic, because personal consumption in 1984 will not increase or just barely, and investment in the socialist sector will be 10 or 11 percent lower than in 1983. Thus domestic

demand does not support the enterprises' targets. In the interest of greater competitiveness in foreign markets, therefore, more must be done to enable the enterprises to export their products and to fulfill the national economic plan's export targets.

As a rule, the enterprises are viewing their investment possibilities optimistically and reckon that 65 billion forints will be available to them, whereas the national economic plan anticipates only 57 billion forints. It is obvious that such a wide gap cannot be closed through some sort of bargaining over sources of investment financing. Thus the question arises as to whether industry is investing too little or too much.

International comparison shows that the rate of gross investment in the EEC countries was 21 to 24 percent in the 1970's, but 29 to 34 percent in Hungary during the same period. Even if we take into consideration that the price level of capital goods in Hungary is relatively higher than in the advanced capitalist countries, our rate of gross investment cannot be said to be low. Therefore we may justifiably say that the main problem is not simply how high our investment rate is, but how we are able to utilize the available possibilities.

If we carefully consider where and for what purpose we use the limited investment resources available to industry, if we pursue a selective and more efficient investment policy, and if we spend much less on construction and buy relatively more machinery, then we can achieve a greater effect even with our relatively smaller investment possibilities.

It should be emphasized, I believe, that although our stock of productive fixed capital has grown dynamically during the past period, utilization of the more productive new installations has not been satisfactory. This is partially because the expansion of fixed capital is not weighed carefully and often serves only to create new jobs. Investments that relieve bottlenecks, free labor and intensify the utilization of already existing capacities often are neglected. To resolve these shortcomings, a change of approach is necessary that does not regard the extensive expansion of production capacities as the only feasible solution, but modernizations that free labor, and the intensification of the already developed production lines, which will permit an increase in the extensive and intensive capacity utilization of valuable, high-performance, modern machines.

It is noteworthy that in Hungary, in contrast with the experience in foreign countries, the depreciation of modern production equipment is commensurate with time, and not with performance. Consequently, we are short of capacity.

On the whole, both the enterprises and the national economic plan expect a decline of personnel and a rise in productivity. It is gratifying that the hunger for more manpower, which we have been experiencing in recent years, has subsided at many enterprises because they have recognized that a diminishing work force is a law-conforming process in industry, a concomitant of rising productivity. Disregarding the possibilities, however, a good many enterprises indicate their intention to increase their work force, and the entire mining industry and the chemical industry even anticipate a rise in their use of live labor.

The objective situation must compel the industrial enterprises, especially the ones coping with manpower shortages, to elaborate programs of long-term and short-term measures that will enhance the more efficient utilization of live labor. In particular:

- To undertake investments that will intensify production and save labor;
- To rely even more than up to now on results that can be attained with more modern organizational methods;
- To retain the best, most entrepreneurial and most needed workers through more differentiated remuneration that is linked more closely to performance;
- To better utilize the opportunities provided by the forms of small business and to rely more on enterprise business work partnerships;
- To use foreign workers carefully because they sharply increase the costs, although foreign workers and the armed forces have been used in the past as supplementary sources of manpower.

The listed methods, however, provide primarily short-term solutions. The permanent solution is as follows:

- As a function of our investment possibilities, improvement of the machine-worker ratio, and the use of modern machinery; and
- The location of such machinery close to the available manpower.

In any event, we must face the fact that the decline of the work force cannot be halted by administrative restrictions. More and more enterprises are recognizing this and are finding special ways to retain or replenish their work force. However, balanced manpower management at the level of the national economy requires the use of society's resources based on factor combination.

Special mention must be made of the increase in the number of enterprises that are operating at a loss. Over 1982, their number increased, unfortunately, by about 50 percent in 1983, and their combined total loss rose from 1.2 to 3.0 billion forints. We are dealing continuously with the problem of enterprises operating in the red. So far as the modes of solution are concerned, there are government measures side by side with organizational modernization, but we regard a turnaround through self-effort as the most effective. This last method was effective also in 1983, and therefore we wish to base on this solution the settlement of our present problems as well. Our view is supported by the fact that at the overwhelming majority of the enterprises the concept of technical development is clear, and the potential exists for increased performances, with which the tasks can be solved.

A certain chronological order also underscores this year's importance. We are drafting the 7th Five-Year Plan, and the consultations on its coordination are now underway. The concept of long-range industrial development is emerging. This is also the period when we must formulate the implementation of the program that the party resolution on industry has set as a task for us. Over and

above all this, the importance of 1984 is underscored also by the fact that this is the year before the next party congress, and the year in which we are commemorating the 40th anniversary of our liberation. As a decisive factor in the development of the Hungarian economy, industry plays an outstanding role in these processes.

#### Objectives of Our Strategy of Industrial Development

The way out of forced slow growth and disequilibrium is to step up the economy's growth rate and to improve the efficiency of utilizing our resources. Only this way will our country be able to maintain its external economic equilibrium also in the long run. Extractive, primary and manufacturing industry, and the infrastructure must be developed with due consideration for the priority of national economic objectives, but consistently. We must choose a growth path that, at a moderate rate of economic growth, places much greater emphasis on technical development and the efficient use of society's resources--in other words, on increasing the productivity of live labor and on improving the efficiency of capital as well--and reduces through a comprehensive program both the energy-intensity and material-intensity of the national economy. It seems to us that the raw materials and basic supplies procured with considerable difficulty, and the added energy, are marketed at the highest possible degree of fabrication. Thereby both the production structure and the products will be more competitive by international comparison.

In conjunction with the development of Hungarian industry it would be a mistake to cut industry in half and then raise the question as to whether extractive and primary industry or manufacturing should be developed. In every case it is necessary to develop the entire chain of production processes, the complete vertical sequence of production stages, in a way such that the appropriate proportionality of the individual stages can evolve, guaranteeing in the final outcome the highest possible degree of fabrication.

Industrial development in the 1985-1990 plan period starts out from the following assumptions:

--The improvement or maintenance of external economic equilibrium will remain the most important task.

--Fulfillment of this task will most probably be enhanced only slightly by a change in the world economy that is favorable from our point of view.

--In spite of this, further expansion of our participation in the international division of labor is warranted, but we can expect to have to overcome various obstacles: the "hardening" of the conditions of CEMA cooperation, and the solution of tasks related to the extent that our terms of trade with the CEMA countries have worsened; on the markets of the advanced capitalist countries, the foreseeable trade-policy barriers to our products; and finally the problems stemming from the solvency of developing countries.

--The improvement of economic equilibrium requires a breakthrough in quality that will perceptibly enhance our international competitiveness.

--Economic growth must be based on the improvement of economic efficiency.

--Macroeconomic management and the system of regulation must be changed in a way such that will ensure the better utilization of the energies within the economy, and the comprehensive development of the enterprises' initiative.

National economic planning is still working on various medium-range alternatives, and therefore it would not be warranted to submit the plan's most important targets to debate before this forum. In view of our policy of industrial development based on factor combination, however, it will be expedient to consider the interrelations that will be able to ensure industry's development under the next five-year plan.

Starting out from industry's present productive capacity, the anticipated growth of the productive branches and the foreseeable market demand, the concept of industrial development has classified the products into categories based on technical and economic index numbers of their economic efficiency.

#### Industry's Possible Breakthrough Points

In the first category belong those products, technologies and production systems within our concept of industrial development that are suitable to serve as breakthrough points or zones, in areas where Hungarian industry's share of world production is substantially greater than our relative weight within the world economy, or where our domestic conditions give us a competitive edge in terms of natural resources, traditional production standards or professional training, which ensures that we will be able to utilize these comparative advantages long term.

In engineering, such breakthrough points remain the production of highway vehicles, related subassemblies and various vacuum engineering products, and the production of farm machinery that evolved through industry's cooperation with agriculture, another very important branch of the national economy. In both areas--i.e., in the production of highway vehicles as well as of farm machinery--parts and subassemblies are of outstanding importance.

We continue to regard as a breakthrough point the aluminum industry that has been developed, or is developing, as a national industry. It has solved the temporary world-market slump with an industrial strategy that can serve as an example for other industries as well. Here we are maintaining the advantages that stem from modern technology in any stage along the vertical sequence of production stages. We expect aluminum to continue its gains as the 20th century's structural material, since the interruption of these gains has been only temporary.

In the instrument industry, with whose products we have gained an approximately 6-percent share of world trade, primarily medical equipment (it embodies a large amount of intellectual effort), peripherals, various systems for process control, and special-purpose microprocessors belong in this category.

In metallurgy, special structural materials are regarded as a breakthrough area. These materials are linked to those properties of the finished products

that can make them the modern structural materials of material- and energy-intensive technologies, on the basis of their weight, high strength or other properties.

The chemical and pharmaceutical industries unalterably remain activities that can concentrate on breakthrough points. We may include here also certain developmental directions of the chemistry of aromatics and of the organic chemical industry; furthermore, the development of the supply base for chemical intermediates.

Within light industry we should single out first of all the production of synthetic leather. It involves the application of domestic technical developments on such a scale that this sector is able to maintain its competitiveness in the automotive industry, fancy leather goods industry, and the shoe industry as well. The production of textiles for health care, and of industrial textiles and accessories, likewise belongs here.

A clearly discernible thread running through industry is that more and more individual industries, within the framework of their horizontal relations, are commendably developing in the same direction. It is already an active process between breakthrough points, and a prerequisite for other development projects as well, that in the supplier industries the material--or structural material--standards of industry undergo a qualitative change. The improvement of industry's structural material standards must stem partially from structural changes; and, as a rule, also the higher degree of fabrication must be realized here, within this target. It is important that the individual structural materials find application where their potential utility value so warrants. The improvement of the structural materials' quality must generally result in that the labor we add to them enables us to remain competitive internationally. In every industry there are very many examples of custom processing where the internationally competitive Hungarian labor added to basic material procured in the world market produces internationally competitive products. In very many instances, the unsuitable quality of the basic material is the reason why Hungarian labor is devalued in the international market.

#### Growth Products

In the next category belong the so-called growth products. Although the possibility of a breakthrough is not so great as in the preceding category, we may include here several circles of activity, production systems and product structures that will be competitive long term.

In the fuel and power industry, for example, implementation of the government program for energy management has produced integrated systems that even in themselves are internationally competitive. Such a system is first of all the electric power system, from generation to consumption, including advanced control technology.

Another such area is the hydrocarbon industry where the technical installations of various petroleum and natural-gas production systems, the transportation and distribution equipment, and the remote-control solutions are competitive exports. In this respect the fuel and power industry actually offsets its own

import needs to a certain extent because the developments in Hungary's gas distribution system, or in the Hungarian methods of secondary and tertiary petroleum recovery, are in themselves technological elements that can be traded advantageously within the international division of labor and can also be used favorably to offset import.

In metallurgy, alloy and tempered steels belong among the growth products, here in a wider sense. We must include in this group the various drawn and coated products, and surface-treated sheets, generally secondary and tertiary products. Spheroidal iron and high-strength castings also belong here. But all this also calls attention to a phenomenon that must definitely be corrected: to the fact that Hungarian metallurgy has such growth products, and the technical and technological potential to produce structural materials of good quality. How this potential becomes a reliable source of supply is the key to Hungarian engineering's development, because it is essential for engineering to be able to start out with suitable structural materials.

Engineering's group of growth products includes NC and CNC machine tools, or their integrated systems that incorporate the results of another key industry as well: of electronics, microelectronics and modern information technology.

Practically every item within the wide range of products in the branch of engineering that builds equipment for the electric power industry likewise belongs in this group: boilers, turbines, generators, transformer substations in power distribution, and such special Hungarian R & D results as water-treatment systems or the well-known Heller-Forgo aircooled condenser design. This branch of engineering is also able to export complete thermal or hydroelectric power plant systems.

The realization of the function-oriented development objective that constitutes the penetration of broadly interpreted information technology into industry--the widespread application of automatic measuring systems, data recording, data transmission, process control and automation--perhaps culminates in engineering but affects every other industry as well. There is just one point I wish to make in this context: Hungarian engineering, like many other industries, has manpower problems. At the same time, on the basis of international comparisons, it can be demonstrated that the degree of Hungarian engineering's automation should be doubled to make it truly competitive internationally.

Another very important area of development in engineering--partially to perfect its own technology, and partially to serve other industries--is the introduction of modern robotics, which must be developed at an accelerated rate. This includes the production of modern robots and manipulators, and of installations suitable for the manipulation of heavy loads.

Engineering remains the supplier industry also for the development of other industries; for example, light industry, the chemical industry, and all vertically integrated production phases of agriculture (it supplies machinery not only for tillage, but also harvesting and food processing). It is true of both engineering and the chemical industry that also their development results are reflected in Hungarian agriculture's entirely spectacular development. These

development results become pilot products because specifically Hungarian agriculture gives them suitable references.

Among the growth products of the telecommunications equipment industry we should mention first of all professional communications equipment: telephone exchanges, microwave relay systems, and transmission equipment.

In conjunction with the development of technologies, among the supplier industries' growth products we should include the production of various hydraulic and pneumatic elements, drives, clutches, linkages, and industrial and household appliances. The development of suitable production capacities for them is essential if industry is to fully satisfy consumer demand.

A development breakthrough must be achieved in the production of industrial tools, and it is likewise essential to supply suitable equipment for materials handling and packaging.

The proportion of growth products is suitable also in the chemical industry to enable it to assume, together with engineering, the role of key industry in the Hungarian economy's development. First of all I would like to mention industrial rubber goods. For example, the Hungarian rubber industry supplies 35 to 40 percent of the hoses used in the production of hydrocarbons. I could continue the list with the further expansion of capacities for plant protectants and manufactured fertilizer; in other words, with chemization as the other important element of bioengineering systems, besides engineering. The chemical industry's products for veterinary medicine could provide another opportunity for development and become a new range of growth products. Finally, in conjunction with the plastics industry, we should mention packaging materials and the production of plastic film for agriculture.

Some cross-links between industries: For the chemical industry to be able to develop, we must continue to pursue an energy-policy strategy based on factor combination. Which means that the supply of naphtha or natural gas for the chemical industry must be expanded in accordance with how much petroleum we can expect. By remedying the previous faulty structure of energy sources and parallel with asserting the general principles of energy conservation, we must continue the process that has been accelerating gradually since 1978 and involves first of all the withdrawal of liquid hydrocarbons from the electric power industry and their redirection, respectively, to the chemical industry and personal consumption. To this end we must simultaneously expand nuclear power generation and stabilize coal mining.

The clothing industry and furniture industry belong among the growth sectors within light industry. About half of the clothing industry supplies the domestic demand. The other half produces for export, respectively it offsets very important raw-material import.

#### Purposeful Disinvestment

I would like to dwell also on two particular problems. One is disinvestment. The other is industry's macroeconomic link to the rest of the economy.

An aggressive technical development approach must permeate our entire strategy of industrial development. When we tailor industrial activity to technical development, suitable environmental protection is linked very closely to all this. Within technological development, industry must choose active environmental protection solutions as far as possible, and the environmental protection objectives must be combined with the conservation of materials and with the utilization of wastes and secondary sources of raw materials.

As I have mentioned, we must map and fully explore the road to disinvestment and retreat. We must shape our strategy of industrial development so that we will not have to wait until our products are forced out of the markets. In the areas that are sensitive in this respect, careful mapping can clarify from where we must retreat, ensuring at the same time the faster and more flexible reallocation of society's resources than before.

It is almost incomprehensible how boldly we are resorting to the leasing of technical equipment and technological subunits from the capitalist countries now in a recessionary phase, in view of the fact that in the practice of Hungarian industry it is so unusual to voluntarily offer to transfer unused capacities—machinery and equipment—to where there is great need for them. Modern machine tools are idle in large Budapest factories while in the provinces such equipment is in short supply, even though foreign trade is keenly interested in the products of the provincial plants.

#### Industry's Macroeconomic Link to the Rest of the Economy

Reviewing now somewhat more broadly the objectives of development, we must emphasize once again that in our time the driving forces of development have basically changed. The process has changed that in 1950-1978, for example, was characterized by the growing import of raw materials and semifinished products. As a logical consequence of the growing import, industry's vulnerability increased. In the wake of the raw-material price shocks, the significant devaluation of our participation in the international division of labor affected us very severely. Our terms-of-trade loss was about 17 percent.

Allow me to present a few statistics characterizing the growth of import. In 1950, the proportion of energy import was still about 10 percent, but it increased to 52 percent by 1978. Import in general amounted to 15 percent of national product in 1950, but it rose to 48 percent in 1978.

We must emphasize particularly that while capitalist import rose, its structure developed to our disadvantage. Regrettably, capitalist import transferred to us not technology but materials; the proportion of materials was about 50 to 60 percent.

Following the 1978 party resolution, the economy and, within it, industry have been able to report significant results in changing these unfavorable proportions. The central action programs have reduced by 18 percent the consumption of petroleum in the economy, by 39 percent the consumption of fuel oil, and by about 26 percent the proportion of soft lumber. Thus we have scored also outstanding successes in reducing our structural problems. But all this does not yet mean that we are now using to the maximum possible extent our limited resources to import modern equipment or technology.

The beginning of a new era in the world economy has basically influenced and changed the scope of the Hungarian economy and, within it, of Hungarian industry. In the wake of the price shocks, the world economy's growth has slowed down, world trade has become sluggish, and changes in world politics, unfavorable from our point of view, have intensified the process of competition and protectionism. So far as the future is concerned, among our structural problems--learning from experience--we must consider first of all what resources can be used to finance our future development.

On the whole we can expect the social costs of the sources of energy and raw materials to rise, regardless of whether they stem from domestic development or import. The possibilities of attracting capital are becoming more limited, and there is also less manpower available. For this very reason, exceptional importance will be attached in the future--also in conjunction with our manpower problems and the general requirements of technical development--to the optimal combination of factors within our technologies, to attaining a machine-worker ratio with which industry can solve its manpower problems and also raise efficiency to the desired level. In formulating the development concepts, then, the economical use of resources must be the guiding principle!

We must continue the process of modernizing our production structure and product structure, whereby we can further reduce the energy- and material-intensity of production and modernize our technology. Simultaneously this process presupposes that a shrinking but better-educated work force will be available to industry.

The stricter conditions of the international division of labor and the intensification of competition in trade with all destinations demand that in the future we cooperate more closely with foreign trade on implementing the modernization of our product structure, recognizing our common interests and nursing them into common strategies, so that we can undertake--with a very thorough knowledge of the market, adapting to it very flexibly, and relying basically on technological progress--all the development that I have already discussed in conjunction with the strategic objectives in the individual industries.

In the long run we must expect the qualitative changes resulting from the 1978 shift to affect development resources as well. Development up to then generally was characterized by a rising rate of accumulation. Simultaneously with the arising demand for intensive development, however, in the long run we can expect the rate of accumulation to decline. Long term, therefore, we must reckon with limited investment resources.

A few words about our position in the world economy. With the outlined strategic objectives we must substantially improve our position. And through the general requirement of technical development we must remedy as quickly as possible in entire industry the absence of modernness and quality.

A common characteristic of our earlier development projects has been the wasteful use of resources, of the production factors, and also the unjustifiably high costs. We must change this also long term. I would like to refer to what we have said regarding 1983 and 1984, to the threeway pressure indicated there. We must again face the fact we will have to live with this process for a long time.

## How the World Economy Around Us Is Changing

As I have mentioned, the set of conditions will be stricter in every respect. This applies to relations with capitalist countries, and to CEMA integration as well. Everywhere there are central programs to ensure the widespread application of technologies that reduce the material- and energy-intensity. Everywhere special importance is being attached to man-centered economic development, to the priority of satisfying consumer demand, and to the faster development of the related supplier industries.

In the world economy we find that the United States, Great Britain and Japan are essentially over the recession. But they are overcoming the recession with a ruthless technical development process in which selection has intensified and the erosion of ailing industries has continued. And the recovery has brought with it a technical level much higher than previously. We must recognize that now, after the two petroleum price shocks, we are in a period of technology price shock. The example of these three countries also proves that it is possible to remain competitive only if we, too, make reliance on the results of the revolution in science and technology, and the general requirement of technical development, an everyday activity in industry.

The conflict between the United States and its European allies is intensifying, for at least two reasons: partially because of monetary policy and the intolerably high interest rates; and partially because this is the first time that the United States is experiencing a spectacular reallocation of resources that is shifting the point of main effort in industrial development toward the West Coast, whereby a new system of alliances is emerging in the California area, with Japan and other countries of the Far East. This necessarily has a strong impact on the European market. In economics, for example, the traditional model has been scrapped that regards the United States economy as an engine which, in the case of a recovery, pulls along the national economies that maintain economic relations with the American economy. In the given instance, this process has been unable to evolve.

With the declining petroleum revenues of some of the developing countries, purchasing power has dropped considerably. Those developing countries are able to maintain a vigorous economy that have evolved into the custom processors of the advanced capitalist countries.

This latter area poses serious competition for the Hungarian economy. For it is common knowledge that in Western Europe about 85 percent of Hungarian industry's products are competing not with the products of the given advanced capitalist countries, but with products from these developing countries. Thus the scope of our growth has radically changed, and within it also society's sets of values are expanding and changing. It is industry's political and developmental obligation to adjust to society's changing systems of interest relations.

## Further Perfection of Macroeconomic Management Indispensable

These days the importance of adjusting to society's changing interests is underscored by the approaching 40th anniversary of Hungary's liberation, because the point is to preserve and perfect the sets of values that have evolved during the past 40 years.

New sets of values are emerging such as, on the one hand, the all-pervasive requirement of quality, the orientation on performance (in harmony with the perfection of work standards), greater appreciation of knowledge, upward reassessment of the entrepreneur and innovator, and the fitting of all this into the everyday practice of industrial development; and on the other hand, the maintenance of income security, and economization. The primary purpose of expanding the forms of ownership, for example, is to let the new forms of ownership become the organizing force behind production and economic activity. Democracy in the economy and society likewise must be broadened.

All this must be implemented within a process of development in which we must clearly recognize also certain fundamental changes in the economy as a whole, respectively in the external economic environment that envelops the economy.

Earlier, for example, we regarded as natural faster rates of economic growth and rising consumption in the capitalist countries. At today's more moderate rates of economic growth, however, we cannot expect this at all. Earlier we regarded also our system of social benefits and social insurance as a great step forward. Although this system retains its high level even today, it is no longer unique.

As a result of our cultural revolution, a rapid training process has taken place in Hungary. But we are no longer able to keep pace with the education explosion that is taking place in the advanced capitalist countries, parallel with the technology explosion. The rate of enrollment in Hungary, for example, is lower than in Western Europe or North America. Yet, it is a question of key importance to increase the brainpower potential, to raise the level of education and knowledge, which again we are using rather wastefully, in the same way as our other resources.

The ideal of equality, one of the most wonderful categories of our socialist achievements and set of socialist values, is gaining new meaning in the course of its evolution. In harmony with the orientation on performance and with the general requirement of differentiation, this ideal of equality must be formulated as the category of equal opportunity to employment, income, housing and culture.

Further perfection of macroeconomic management is a necessary, timely and unavoidable task that serves to increase the efficiency of our economy and to adapt it to the changed conditions. Competition in international markets is intensifying, and the consequences of this are perceptible in market relations. Our economy is slow in responding to these phenomena, and therefore its adaptability must be improved. Adaptation must be accelerated, otherwise the delays in adapting could worsen our economic situation.

I would like to emphasize that we are talking about further perfection of macroeconomic management, and not about the reform's reform. What we need is to establish conditions more favorable for government supervision that helps to make economic activity more efficient, and for independent, entrepreneurial and more successful enterprise management. These objectives are realized through an economic mechanism that employs economic regulators to make the economy's plan-conforming central management more effective. This economic mechanism

assigns a more active role to market relations. It increases further the enterprises' economic independence, flexibility, initiative and accountability. Enhances the more open assertion of interests and their better coordination. Reinforces an owner's attitude. Unifies the production function and marketing function. Establishes a more direct link between the domestic market and the foreign markets. And helps to utilize the advantages of the international division of labor. Work on further perfecting macroeconomic management is in progress. Therefore the preceding may be regarded as interim information.

The state's role in economic development will change, and therefore it is absolutely essential to further perfect our economic mechanism. Within the framework of its economy-directing activity, the state in the future will have to define and ensure the framework, instead of guaranteeing what happens. In continuing the reform, therefore, it will be necessary to provide broader opportunities for the reallocation of capital.

The owner's rights must be made more colorful. We must achieve that collectives and individuals cling more closely to property and are able to participate creatively in formulating development concepts. Enterprise planning must be developed: partially the independence of enterprise planning, and partially the assumption of greater accountability for enterprise planning.

Here I would like to revert to the differentiated concept of industrial development. In enterprise planning we must achieve so-called moving planning. In other words, we must abandon the practice of planning that thinks in years, as a result of which there are qualitative differences between the closing of one year and the starting of the next, whereas life obviously is continuous. Better enterprise planning in greater depth presupposes a comprehensive strategy for industry, one that enables us to adopt standpoints and make decisions based on reliable data, for retreating as well as for going ahead.

Industrial policy and industrial development have very important regional interrelations, the processes of enterprise planning have also territorial-planning aspects, and the horizontal and vertical planning processes must comprise a single system.

Perfection of the price system is a very important area of macroeconomic management's further improvement. The dismantling of barriers will continue, as will the realization of the objective that prices reflect real market conditions. In the course of this, however, we must establish much closer ties with both domestic and foreign trade, to ensure more comprehensively that knowledge of the market and the market demand play a decisive role not only in current production, but in the development concepts as well.

In income regulation, changes can be expected regarding both live labor and development resources. The cost of live labor will rise, in conjunction with industry's manpower situation and the intensive phase of development. At the same time, the rate of the profit tax will be reduced and the enterprises' profit incentive will increase. We would like to clarify also the situation of the development funds. If possible, the various forms of income centralization—centralization of the development fund, the construction tax, and the investment tax or duty—will be abolished and replaced by a uniform property tax.

The centralization of depreciation will likewise cease. All these processes will provide the enterprises greater opportunity, and also increase their responsibility, for formulating and implementing a differentiated strategy of industrial development.

The regulation of earnings must reflect differentiation and the requirement of orientation on performance, parallel with greater incentives to increase performance. The limiting role of average wages must be abolished.

In foreign trade, within the framework of cooperation, exchange rates will play a greater role. It is expedient to elaborate exchange rates that cover the greater, decisive proportion of export.

A few words about the modernization of supervision. With the organizational system's modernization, of course, the enterprise forms will change.

The organizational system will foreseeably become differentiated. The present, relatively uncomplicated, enterprise and organizational forms will be replaced by enterprise forms that are more varied and require the more active cooperation of the enterprise directors and collectives. Three principal types of enterprise forms are now taking shape:

--The so-called public administration enterprise (basically the sphere of public utility services) where the minister in charge of the industry concerned continues to exercise the owner's functions;

--The enterprise supervised by an enterprise council. The so-called enterprise council--consisting, in equal proportions, of representatives of the state, the enterprise's workers and its management--collectively exercises the owner's rights. But the ministry retains its right to approve or veto the appointment of the enterprise's executives, or the most important strategic decisions. The ministry retains also its right to found enterprises.

--The enterprise under a management elected by the enterprise's collective. Foreseeably this enterprise form can be introduced in the case of smaller enterprises, i.e., at enterprises where the number of employees is below a few hundred.

In addition to the enterprise forms listed above, in the future there will be a role also for subsidiaries, small companies, and all other forms that will enable the enterprises to increase their performance and develop their efficiency.

It is common knowledge that debates are now underway on enterprise efficiency as a function of enterprise size. I wish to reiterate that the Ministry of Industry has expressed on several occasions its standpoint that enterprises of every size will have their place and task in the future system of enterprise organization.

There is only one qualifying factor: how the given enterprise serves to add more value in the economy. The historical and international experience shows that economic progress is the most vigorous when economic organizations of

different size compete with one another and develop in an integrated manner. Therefore we believe that the organizational changes must be implemented in harmony with the economic conditions and with due circumspection. For here we need far-reaching measures that determine the organizational structure's development in a combined manner, and not exclusively from above or below.

Collaboration with cooperatives, industrial cooperatives and private artisans will remain also in the future a definite part of our industrial development strategy.

For example, additional means of industry's greater mobility and flexibility, of its ability to adapt faster to the changing conditions, will be the enterprise business work partnerships, small businesses, and in general the forms that can fill a gap and convert industrial activity into a consistent system.

We would like to rely also in the future on such a driving force as the socialist brigade movement and, in combination with this movement, the labor competitions. Here again I would like to refer to the coming events such as the 40th anniversary or the approaching party congress.

Concerning the future, then, there are three directions in which we must proceed: First, we must perfect further the unbroken chain of production and marketing, so that market forces--in harmony with technical progress--may assert their effect much faster than up to now. Secondly, as a prerequisite for all this, organization and management must be modernized. And thirdly, in conjunction with the orientation on performance, stronger economic incentives must be provided. Market, management, and awareness--these are the three principal directions that are linked very closely to the realization of the strategy for industrial development that we have presented in general outlines.

When formulating the development concepts, our behavior unquestionably will have to be man-centered also in the future. We must achieve this through orientation on performance, so that the workers will feel better at their workplaces and their morale will improve.

There is need for mutual confidence. It must be increased also between enterprise directors and the state that oversees industry. To this end the scope must be broadened of agreements of the type we concluded to fix the 1984 export tasks. Naturally, mutual confidence also means the extinguishing of the sparks of mistrust that erupted here and there over the agreements already in the first weeks.

In the future, functional relationships will have to be simplified in such a way that industrial activity's sets of objectives, means and conditions--the forecast, the fact and the consequence--will be clearer. In cooperation with the other ministries, therefore, we will seek ways to simplify relations with the state budget. At present, in nearly 300 of its items, the state budget intervenes in the economy, either by centralizing income or in the form of subsidies. In many instances these interventions interrupt the logical, vertically organized sequence of production stages, and hamper a clear overview of processes where the objective is to attain the highest possible level of processing; i.e., to achieve that the raw materials and supplies leave industry and the economy at the highest possible degree of fabrication.

Central redistribution must be partially simplified and partially curbed. The more so because redistribution at present equalizes between profit and income, and thus it essentially prevents differentiation among the enterprises.

I have indicated that a basic objective in industry's supervision is to strengthen mutual confidence with the enterprise directors. To this end I request the help of my fellow managers who are here today. Relying on this mutual confidence, we would like to improve and develop further also the relations between the Ministry of Industry and the other ministries. So far as the future is concerned, we would like to provide more room for mutual confidence, and for sound and realistic mutual analyses. And we want to do this in the hope of achieving a bigger industrial performance of greater value, relying primarily on the work of the enterprises.

#### Industrial Performance of Greater Value Necessary

Commonplace but, regrettably, true are the statements that, with the beginning of a new era in the world economy, the world market has devalued Hungarian labor and rates most of our products as average; and that Hungarian industry's productivity, on the basis of statistical comparisons, is about half the productivity in the advanced capitalist countries. We have achieved some success in the more economical and sensible use of materials and energy, but in many respects their use is still wasteful.

We are not using the most advantageously the limited development resources that are available. Just one statistic: in spite of the limited resources, idle capacity has increased by 6 to 8 percent. Cooperation within industry proper is not satisfactory, and the proportion of rejects is relatively high. In many instances this necessitates additional labor at the cooperating partners; and occasionally it makes continuation of the activity impossible.

We do not appreciate adequately the outstanding performances. All these are problems that must be solved, not separately in a programmed sequence, but simultaneously and in parallel. Their solution is essential to industrial development, to the future of industry. Thus when I request the enterprise managers' increased confidence and cooperation, I also wish to emphasize that, in my opinion, the joint solution of these problems is an area of cooperation in which we can find each other.

A few words about cooperation within the family and in the management of industry. Industry essentially is a system, a subsystem of the national economy, one in which it is easy to recognize the mosaic system that the members of a family comprise. In this system, as in every mosaic system, one or two elements may drop out temporarily. This might not influence the overall picture, but it could create very great stresses in the microclimate. Thus when I start out from the general requirement of development, I would also like to emphasize that this development is unattainable without the perfection of interpersonal relations. This development must extend to all areas.

The industrial enterprise not only represents a definite technological stage in the vertical sequence of production stages, but in the given area it also influences the living conditions and is the driving force and specific support in

the processes of socioeconomic development as well. In the future, therefore, this mosaic system will have to expand and develop its activity in this direction as well.

Economic growth and industrial development can succeed in Hungary only if they are man-centered and based on awareness. The macroeconomic directions of these development objectives can be specified in advance, but we must struggle daily for their realization. This daily struggle presupposes daily performances, i.e., that the mosaic's elements stand their ground daily.

1014

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## CULTIVATION OF RYE, WHEAT, TRITICALE DISCUSSED

Warsaw ZYCIE WARSZAWY in Polish 11 Jun 84 pp 3, 4

[Article by Tadeusz Wolski]

[Text] Poland is the world's largest grower of rye--it contributes twice as much rye as winter wheat. At one time the situation was similar in many European countries. However, in the last several decades their cultivation of rye has dropped dramatically, giving way to wheat and barley. This has been possible due to increased farm cultivation, the reduction of soil acidity, increased fertilization and successful combating of weeds with chemicals.

However, in Poland the cultivation of rye has also declined in the last 20 years from 5 million to 3 million hectares. But the production of rye grain has increased due to higher yields, which we owe in part to increased fertilizing and in part to the development in our country of productive and hardy varieties resistant to lodging that meet and often exceed the highest European and thus world standards, since rye is primarily a European crop. Proof of the success of our rye varieties is the growing seed grain export of varieties such as "Dankowskie Zlote" and "Dankowskie Nowe" to many countries.

Rye grain, or actually rye flour, constitutes an excellent staple for the production of rye bread of high taste and dietary value recognized by a large percentage of our country's population. The only drawback to this bread is its higher energy-intensiveness in comparison with wheat baked goods and, thus, its higher production costs.

Nevertheless, we produce too much rye grain and, therefore, a considerable part of it is used for fodder. However, this fodder is not as high in value as that from other grain.

Admittedly, the cultivation of grain has produced high-yielding varieties resistant to lodging, but it has not yet managed to improve the rye in terms of grain quality. This is not so much a matter of improving the quality of rye grain as fodder, which is an extremely difficult task, as it is of improving its quality as a bread grain, which would enable us to acquire stable markets from among European countries which currently import this

staple from the Western Hemisphere. The export of rye bread in exchange for the import of feed grain would greatly aid the solution of our grain problems.

The development of a variety of rye resistant to fungi and to biochemical pregermination changes in the grain is not an easy task. This quality is decisive primarily for the baking value of rye flour, which is of particular significance during years with rainy, damp harvests.

However, a question could be raised here: For how long are we sentenced to such a large share of rye in grain cultivation? To be sure, articles have been appearing in the newspapers for some time now which attest to the fact that it would suffice to replace rye with wheat and barley to solve the grain problem. The authors of the articles often base their conclusions on a simple comparison of the yield of these grains contained in the ROCZNIK STATYSTYCZNY without taking into account significant differences in the fertility and cultivation of the soil on which wheat, barley and rye are grown. Therefore, it is no wonder that propaganda on this basis did not bring any results and that the cultivation of rye has maintained itself in Poland at a level of approximately 3 million hectares for a number of years now. The reason for this is not the ignorance of farmers but sound "peasant reasoning."

However, in recent years yet another, partial solution to the rye dilemma has been taking shape. A new crop has been developed by grain growers--the first grain created by man by crossing wheat with rye. The new crop has been named Triticale. This is a Latin name formed by combining the names of a variety of wheat and rye, *Triticum* and *Secale*. The name has become accepted in most languages. In Polish we call this new crop "pszenzyto," although we also use the Latin name.

We are currently on the threshold of introducing this new grain crop into cultivation. It can partially and, of course, gradually replace rye on more fertile soil, especially where the major factor which makes it impossible to obtain constant high yields of wheat and barley is soil acidity. The replacement of rye with Triticale should under these conditions bring much benefit, above all higher yields especially in years when wheat is hit with disease and higher grain fodder value. This grain contains as much protein as wheat, i.e., approximately 2 percent more than rye, and is also of a higher quality than wheat protein. Growth inhibitors occur in significantly smaller amounts than in rye--virtually harmless. Therefore, Triticale grain is an excellent feed for poultry and for nonruminants.

The first Polish variety, "Lasko," grown at the Poznan Plant Cultivating Station in Laski, near Warki (Radom Province) and obtained by crossing Hungarian and Canadian Triticale with Polish winter wheat, was recorded in Poland in 1982 and was introduced for farming during the same year in the FRG and in France, and a year later in Austria and Switzerland. This year [1984] it will most likely be introduced for farming in England, Holland and New Zealand. It is considered to be a world standard in many experiments in countries with a milder climate than ours (among others, in the southern states of the United States).

A drawback of this variety is its weak resistance to cold as a result of which it is not recommended for growing in Poland, although there are farmers who gladly take the risk of having it killed by frost for the benefits which the growing of "Lasko" gives. This pertains particularly to the western regions of the country, which have a milder climate.

It would not be wise to have the cultivation of this grain stop at the development of just this variety. Currently, there are six more varieties under state-conducted testing which precede the introduction into farming and recording in the Register of Original Varieties.

It is expected that as early as this year, the next variety, "Grado," will be introduced for farming. This variety was grown at the Poznan Plant Cultivating Station in Choryn and is equally fertile and more cold-resistant than "Lasko." A variety which is even more promising, "Dagro," has the chance of being introduced for farming in 1985 or 1986.

Both of these varieties were obtained by multiple crossing with Canadian and Hungarian Triticale and Polish varieties of "Grana" wheat and "Dankowskie Zlote" rye as well as French and Mexican wheat.

In the fall of last year, four more varieties were introduced for state testing, including two from Choryn, one from Laski and one from the Experimental Plant for the Cultivation and Acclimatization of Plants in Malyszyn (Gorzow Province). Broad-scale plans for work on crossing existing forms of Triticale with wheat and rye, and with each other, indicate further progress, all the more so since currently some of the newest varieties are yielding more than the model varieties "Lasko" and "Grado."

Currently, the results of the Polish cultivation of Triticale already make it possible to introduce this crop for farming in regions of the country which are less exposed to killing frost, i.e., everywhere that winter barley and rape are grown without greater risk.

This concerns "Grado" Triticale and, in the near future, "Dagro." The replacement of rye with Triticale on sandy-loamy, acid soil should make it possible to increase harvests, at least during years when rye is attacked by disease (every 3 to 4 years), and should allow a significant improvement in the value of the grain as fodder.

Currently, some farmers who began growing Triticale experimentally are already obtaining very good yields and also good results in the fattening of hogs and poultry. In addition, Triticale straw has considerably higher value as fodder not only than rye straw but also than wheat straw. This is primarily due to the fact that it is not attacked by disease.

The use of Triticale as bread grain is also possible. Admittedly, the bread obtained from Triticale flour is smaller in size than that obtained from wheat flour, but it is good in structure and high in taste value. Triticale flour can also be used in the making of various kinds of dry cookies and flakes.

The cultivation of Triticale has grown quite dynamically in 20 years in many countries of the world. Spring varieties of this crop are cultivated in Mexico by CIMYT [International Center for the Cultivation of Wheat and Corn], which was founded by the well-known Nobel Peace Prize laureate, Dr. Borlaug. From there, new varieties of Triticale reach many countries, such as India, Pakistan and Australia, as well as countries of South and North America and Africa. Varieties of Triticale have already been grown for many years in Canada and the United States. In Europe also, varieties of Triticale have been cultivated, generally winter varieties introduced on a relatively small scale for growing in Spain, France, Italy, the FRG and Hungary. The greatest acreage of Triticale is found in the USSR, where recently there were approximately 180,000 hectares.

However, no country in Europe is as vitally interested in Triticale as Poland, this being due to our problem of rye overproduction. In addition, it is worth noting that currently Poland leads in the cultivation of winter Triticale, which has become our specialty. The licensed export seed kernels of the "Lasko" variety to several European countries is already beginning to bring in revenues not only from the sale of the seed but also from the growers' margin of profit received from the sale price of the seeds reproduced abroad. Further license agreements are already being drawn up.

Of course, we should not expect Triticale to do too much. The introduction of this crop, as is the case with anything new, entails a certain amount of risk because surprises resulting from the appearance of a new factor which limits yields should not be ruled out. However, positive surprises may also appear. Triticale also cannot solve problems arising from a low level of development and technical backwardness of our agriculture.

9853

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## QUALITATIVE FACTORS IN ECONOMIC DEVELOPMENT

Bucharest ERA SOCIALISTA in Romanian No 12, 25 Jun 84 pp 1-4

[Article by Dr Ion Nicola: "Qualitative Factors in Development of the National Economy"]

[Text] In the years of socialist construction and especially since the Ninth Party Congress great progress has been made in Romania's socioeconomic development and in raising the people's level of civilization and material and cultural welfare, mainly because of the great revolutionary changes that have been made in the last 40 years under the RCP's leadership. Romania is an industrial-agrarian country today with a strong industry and an agriculture in full progress and it is rapidly approaching the countries with medium economic development. Compared with the prewar period, its industrial output has increased by 53 times in the years of socialist construction, its agricultural output by 3.7 times, and the national income by 16 times. Actually the facts show the radical transformation of a once underdeveloped country dependent upon the economies of the many powers that were dictating the terms of its existence as a state into a country with a vigorous economy and an advanced social order that is asserting its independence and sovereignty in the world and also contributing actively to the world circulation of material and cultural values and to the discussion and solution of the complex problems of the contemporary world.

What was Romania's level of economic development and how did it participate in the international exchange of values between the two world wars? The questions were succinctly answered by the Romanian economists of the past and included in formal writings of the time. They said for example that in the said period Romania was selling the output of 10 agricultural workers for the price of that of just one industrial worker in the West. (1) One Romanian economist of the time pointed out that "Romania's national wealth is still in a largely latent state and consequently of limited commercial value," (2) again indicating Romania's economic backwardness on the eve of World War II because of internal maladministration and plundering of its resources by the native capitalists and the international monopolies. We also find the calculations of some foreign economists edifying, who determined that per capita national incomes in the 1925-1934 period "expressed in dollars of unified purchasing power" were "highest for England (\$1,069) and minimum for Romania (\$243)." It was further concluded that

Romania's income was surpassed by a number of countries like Greece (3) and other countries considered quite economically backward for that time.

We are bringing up these economic facts for a better understanding of the extent of the efforts but also of the results obtained by the Romanian people in the years of socialism by way of exploitation of Romania's potentials and recovery of its rights and deserved place in the concert of nations of the world.

In the developmental strategy and especially in allocating funds for development the decisions about the economic structure differed from one period to the next according to the particular needs, the expected effectiveness, and the existing world conditions. In the middle of the 1960's special emphasis was placed on accelerated industrialization, against the background of general economic development, with priority on the peak sectors expected to make better use of raw materials and to help outfit the economy with fixed assets, promote technical progress and modernize the Romanian national economy as a whole. In the years of the planned economy the volume of fixed assets in Romania has increased by about 10 times. Out of about 2.2 billion lei in fixed assets existing at the beginning of 1983 over 1.8 billion lei have been activated since the Ninth Party Congress and are directly contributing to consolidation of Romania's productive potential and to growth of the national wealth. The proportion of the fixed assets in the electric power, machine building and chemistry sectors in the total fixed industrial assets has reached 52 percent from 37.6 percent about 20 years ago.

The progressive economic effort of the last few years, the accumulations gained from equipping the national economy and restructuring the sectors, and the start on the programs planned under Nicolae Ceausescu's direct guidance have brought about an important advance in intensive development of the national economy and an improvement in the qualitative aspects of economic growth, and they helped to overcome some difficulties that arose in the first 2 years of the five-year plan. Romania's economic development and especially its industrial development in 1983 as well as the 4.8 percent growth rate of commodity production and one of 5.1 percent in net output indicate a rapid evolution in comparison with the industrial development of the other European countries, greater effectiveness of the whole activity, and also an improvement in the management process and in the distribution of the forces and resources, namely in accordance with the nation's potentials and strategic interests and its need of increasingly active participation in the worldwide circulation of material values.

The effective production capacities in the fuels and electric power industry and the machine building and chemical industries made economic growth possible while imports were reduced to rational limits and the other sectors were equipped and restructured at the same time. As a matter of fact during the first 2 years of the five-year plan, when the restrictions imposed by the worldwide economic and raw materials crisis were quite serious, when highly developed countries with old economic traditions like Great Britain, the FRG and even the United States approached zero growth or fell below it, and when unemployment assumed alarming proportions, Romania, a developing socialist country, steadily increased its industrial and agricultural production and national income and the number of working personnel not only did not decrease but increased by 95,000 persons in 1981 and by 118,000 in 1982 and reached 7.6 million last year, or 47,000 more than in the preceding year.

These noteworthy results were made possible by development of industry and the other economic sectors, but they are also due to scientific management, understanding and use of the objective laws, elimination of contradictions and disruptions, and continuing adjustment of the policy of distribution of national income between development and consumption, as well as the policy of investing according to branches of the economy and sectors.

The results achieved in Romania's socioeconomic development indicate the particular importance of correct evaluation of the possibilities, their correlation with the needs of the national economy, thorough knowledge and specific application of the requirements of the objective economic laws, regulation of production, and organization and direction of all social activity on a scientific basis. By their provisions, Romania's five-year and annual plans have proved to be real and effective instruments for correlating the forces and resources with the social needs of national development. The previous accomplishments and the stage of fulfillment of the tasks assigned in the RCP Program for Building the Fully Developed Socialist Society are a good foundation for achieving the appropriate parameters for a country with a medium economic development and make it possible to attain the strategic objectives set by the party.

Fulfillment of the provisions for 1984 and 1985, alongside the results of the first 3 years of the current five-year plan, will secure the harmonious development of the productive forces throughout the whole country, improve social relations, and raise the people's level of civilization and their material and cultural living standards. As Nicolae Ceausescu pointed out, all of Romania's economic and social activity must be concentrated upon "achievement of a new quality of work and life, extensive application of the advances of the technical-scientific revolution, intensive development of science and education as basic factors for socialist and communist construction, and improvement of all workers' professional, technical, scientific and cultural qualifications." Actually it is a question of securing a new balance and the harmonious development of all fields of endeavor in order to eliminate the contradictions and disruptions that have arisen and to create conditions for further intensive development of the productive forces along with improvement of production relations.

This applies especially to more rapid development of domestic raw material and energy resources in order to correlate them with the requirements of the processing industry, with the production capacities in that economic sector, and with the existing domestic resources, which is one of the great problems of the new quality and the new balance, and its solution can rationalize imports, expand the possibilities of supply out of domestic resources, and increase production of fuels, coal, petroleum and gases as well as electric power production based on lignite, shales, nuclear energy, water power and unconventional sources. It also applies to the provisions for exploitation of a constantly growing volume of recoverable resources.

The results of the first period of the current five-year plan prove that the above-mentioned objectives are feasible. According to the provisions, about 94 percent of the primary energy requirement will be covered out of domestic resources this year, a new and important step toward national energy independence. And in some sectors the recoverable materials will meet 50 percent and even more of the raw materials requirement. At some points recovery, reconditioning and reuse of parts and subassemblies can provide for as much as 50 percent of the requirement.

The present degree of technical equipment of the economy in general and of industry in particular presents special problems as to the most complete and rational use of the production capacities and the prompt and efficient performance of maintenance and repair operations in order to enhance effectiveness and better correlate the existing forces and resources. The rise of the indices of extensive and especially intensive use of the equipment and installations in the machine building, electrotechnical and chemical industries and the increasing use of turbine sets in the power industry and other economic sectors are priority problems that concern and will increasingly concern the managements of the ministries, centrals and economic units. Properly used, the existing capacities in a number of sectors can more than provide for the needs of the economy.

Of course the vast effort that has been made to equip and modernize the economy must be reinforced by improvement and accurate management of production, by improved technologies, and by fuller loading of the existing capacities in order to increase the volume of output per unit of space or capacity and thereby expedite recovery of the resources advanced by society in the national productive potential.

Restructuring of the economy in general and of industry in particular is a basic component of the new quality and the new balance, and it is emerging as a regular developmental process going on in Romania. Expansion of the industries making better use of domestic resources and of those demanded by the scientific-technical revolution and the needs of effective economic growth is basic to this process. The results in this area appear in the table below, which indicates the evolution of the industrial production structure according to sectors:

Sectors	Computed in			
	Comparable 1955 production costs		Comparable 1963 production costs	Current costs
	1938	1950	1965	1982
Total industry	100.0	100.0	100.0	100.0
Including:				
Processing industry	...	89.5	90.0	92.7
Ferrous metallurgy (including ferrous ores extraction)	4.1	5.4	8.3	8.2
Nonferrous metallurgy (including nonferrous ores extraction)	2.6	2.1	3.2	4.0
Machine building, metal processing	10.2	13.3	21.2	29.7
Electrical engineering	...	0.9	2.9	4.1
Chemistry	2.7	3.1	6.7	9.6

The necessities of development, imposed by Romania's internal needs, by the international economic situation, and by the shifting economic flows demand a more rapid economic restructuring, of industry especially, in order to manufacture the necessary products with better technical-operational characteristics that will

make them competitive on foreign markets. This process is greatly expedited by the efforts to carry out the party's and state's Special Program for Technical and Qualitative Improvement of Products and Reduced Inputs of Energy and Materials.

According to the provisions, developing scientific research and modernizing manufacturing technologies will accelerate redesign of the products and sharply increase the proportion of new and modernized products of world quality from 68.7 percent in 1985 to 84.6 percent in 1987 and 95 percent in 1990. A 2-5 percent proportion of products with technical-operational characteristics and reliability even above world standards is planned for the end of this period.

Faster renovation of products and technologies is recommended for the machine building and metallurgical industries and the other sectors as well (chemistry, construction materials, and the light and food industry). Production of energy-intensive materials will be kept within rational limits and production of substitutes or consumer goods consuming less energy, raw materials and materials will be expanded. Of course that process must be evaluated in its entirety, in evolution, and in a constant evolution.

Romanian socialist agriculture has great reserves in the most productive use of both its land and its labor force and the technical resources in its inventory. Therefore the party has called for concentration of efforts on implementing the National Program for Secure and Stable Agricultural Harvests, which will lead to higher yields in 1984, and on development of zootechnology and growth of livestock production, which will raise the share of that sector in the total agricultural output from about 43 percent at present to nearly 50 percent at the close of the 1980's.

Fulfillment of the planned tasks of agricultural development will also be stimulated by implementation of the provisions of the Uniform Program for Increased Agricultural Outputs from Private Farms of Agricultural Cooperative Members and Farms of Private Producers, providing, as Nicolae Ceausescu said, for "the entire requirement for internal consumption as well as this sector's more active contribution to the self-management and self-supply program and to the central state reserve."

All-around development of the nation's localities and enhancement of their municipal facilities (intended to help do away with the essential differences between city and village) reflect the new emphasis upon regional systematization and throw a new light on the question of reconsidering the very concept of "urbanization." On the basis of a new conception of systematized development of the territory as part of the party secretary general's revolutionary thinking, equipment of the localities with water supply and sewerage networks has been increased rapidly, the lines of communication have been modernized, and the number of social-cultural and educational buildings has been considerably increased since the Ninth Party Congress along with the increase in the number of cities.

Under the party secretary general's direct supervision a mass action has been under way to determine and evaluate the buildable spaces of the nation's localities, areas that are being reanalyzed on a continuing basis for their optimal proportioning in accordance with organization and development of modern economic

and social activities within them. The results of this, as well as the classic indicators of regional development of the productive forces (per capita volume of gross output, number of workers per 1,000 inhabitants, and growth of fixed assets), indicate the progress of a far-reaching process of general, all-around development of the nation's localities.

The formation of the unified agroindustrial councils and improved organization of their activity and that of the industrial-agrarian centers will stimulate economic development and equipment of the localities even further. Alongside the larger cities and the industrial and industrial-agrarian cities, agrarian-industrial cities will be created in order to make more efficient use of the material and human resources and to help improve the living standard and quality of life in all the nation's localities.

The implementation of the investment-construction program and the expansion of transportation and telecommunications and all sectors of socioeconomic activity are integrated in the process of achieving the new quality and the new balance of development. The options for the present distribution of the national income between development (about 30 percent) and consumption (about 70 percent) are not to the detriment of development, as it might appear at first glance. Those options reflect reorientation of the investments toward expansion of the energy and raw materials sector and equipment and modernization of the economy, that is toward another way of stepping up the economy in order to enhance its adaptability to the demands of the new economic flows and the foreign markets and toward the development of agriculture and the services sector.

Improvement of the quality of life and development of a modern economy with structures compatible with a high economic effectiveness require more rapid growth of the services sector, of services of the most different kinds from industrial maintenance services to nonindustrial, household and other services. The RCP Program says, "Special emphasis will be placed on development of public services in cities and villages and on satisfaction of the most varied requirements of a modern civilized existence. The trade network will be developed in keeping with the growing sales of consumer goods and providing for uniform trade in both cities and villages. The whole activity of serving the public will be improved."

The efforts of the workers in this sector must be concentrated on the tasks assigned in the Long-Range Program for Development of Services. Expansion of these activities and of all components of the services sector does not mean increasing the "consumerist and nonproductive activities" but is an objective requirement of the present period constituting one of the aspects of the quality of life and an indicator of the degree of emancipation of the national economy and of social progress. Comparisons of the results in this field in Romania and in other, economically developed European countries show that there are still quite great distances to be covered and that the economic ministries, people's councils and service units must increase their efforts to close these gaps.

The RCP's original strategy for economic construction emphasizes creation of a modern economy based on greater economic effectiveness and growth of labor productivity and of productivity in all activities. The measures for accelerated growth of labor productivity, a critical factor for increased production and

national income and for greater prosperity, all require efforts to further improve planning and especially to carry out Romania's plans for socioeconomic development. In order to meet the requirements of the Program for More Pronounced Growth of Labor Productivity and Improved Organization and Standardization of Labor in 1983-1985 and on to 1990, specific measures and actions are necessary in each and every ministry, central, enterprise, section and worksite to promote technical progress and to expand mechanization, automation, chemization and robotization of the production processes. There are special requirements for improved management and organization of production and labor, expansion of micro-processors and data processing, professional improvement, and continuing improvement of standardization of labor in keeping with the technical inventory.

Obtaining increasing gains in production almost entirely through growth of social labor productivity is an objective necessity of socialist construction and of Romania's present and future socioeconomic development. It is only by specific efforts in these directions that we can double labor productivity and thereby attain the level of productivity in the developed countries of the world in the shortest possible time. According to the provisions, labor productivity throughout national industry will be up 41 percent in 1985, 68 percent in 1987 and 113 percent in 1990 compared with 1980. According to the assignments in the said program, the gains in labor productivity are to be made by introducing and generalizing technical progress by 52 percent in the current five-year plan, by 53.5 percent in 1987 compared with 1985, and by 55 percent throughout the next five-year plan. The difference will be made by improved organization of production and labor and improved professional qualifications and training.

Romania's whole economic development and the evolution of its socioeconomic structures are viewed by the party secretary general as processes to take place against the background of increasingly sustained efforts to expand and improve scientific research and technological development and to expedite application of research results to production. Development of research according to the needs of the economy, curtailment of the research-design-production cycle, and greater effectiveness are indicators characteristic of the present period that must be integrated in the inventory of correct and efficient management of future development.

The efforts to attain the new quality of Romania's socioeconomic development and construction also include the strategic objective of Romania's more intensive participation in the international division of labor, priority increase of exports, and reduction of imports to the minimum, a policy that will secure a favorable balance of trade and continuing reduction of the foreign debt.

Romania's foreign trade was 34 times greater in 1983 than in 1950 and exports, considered separately, were 43 times greater, in addition to the highly important and significant fact that while Romania's balance of trade was unfavorable in 1980, since then exports have exceeded imports every year, by \$300 million in 1981, \$1.3 billion in 1982, by more than \$2.4 billion last year.

The objectives and tasks of foreign trade and especially of the export provisions require a concerted effort on the part of the producer enterprises, the centrals and the ministries to prospect the foreign markets, to conclude advantageous contracts on that basis, to produce the output for foreign countries punctually and in good quality, to diversify the methods of marketing the products, to expand

the sales markets, to implement the accepted cooperative programs, and to undertake new programs of the kind with the CEMA countries, with the other socialist states, with the developing countries, and with the developed capitalist countries as well. The party documents require all foreign trade to be conducted on the principle of Romanian foreign policy. The new quality to be achieved in Romania's development as well as the new balance require foreign trade to play a more active part in Romania's all-around progress and to obtain advantageous rates of return that will contribute to the general growth of the national income and Romania's national wealth. As Nicolae Ceausescu pointed out, "With the present material base, we can increase the value of the export output by at least 50 percent by making products of better quality, and for the same quantity of better processed raw materials we can collect 50 percent more foreign exchange than we are collecting now."

Application of the entire series of measures to perfect the economic-financial mechanism, implementation of its requirements in every economic unit, improvement of the wage system, application of the overall contract system, and basing all units' activities squarely on the principles of workers self-management and self-administration have a vital part to play in Romania's planned socioeconomic development and growth of economic effectiveness. Along with the effort that must be made to implement the physical production plan, the economic units must have more responsibility for lowering production costs and especially the material outlays, for the most efficient use of the resources for national socioeconomic development, and for increasing the profits so that there will no longer be any unit or any product without profitability and profits. All economic and budgetary units must increase their efforts to use the existing material base economically and to introduce a strict regime of economies.

The whole process of raising the working masses' level of awareness as well as qualification, multiple qualification and retraining of personnel and raising their level of awareness are indispensable to the great tasks we have to accomplish. That is why the party leadership is increasingly emphasizing these efforts as part of the requirements for attaining the new quality.

The growing complexity of the Romanian economy and the intensified interdependence of the production sectors and branches are making new demands upon the administrative and decision-making process to rationalize the measures to be adopted, especially since the scientific principles of planned management require not only determination of the existing situations in the national economy but particularly determination of the developmental trends and directions of the productive forces, economic relations, and other social aspects by studying their interconnections. Planning and determining special programs on that basis are becoming vitally important in the present period, now that the technical-scientific revolution and the radical economic and social changes are accelerating the developmental rate and making more and more new qualitative changes in all areas of human existence. Therefore the party administration and Nicolae Ceausescu himself consider it essential to planned management of the Romanian economy to make scientific and detailed studies of the causes that accelerate and govern the evolution of the phenomena on the level of the economic unit and on the regional and national levels, which causes favorably or unfavorably affect the modern world's evolution and the predictions of the situations that might result from their combined action.

Administrative activity on all levels can be warranted only by the results obtained on the general level of the ministries, centrals and economic or territorial-administrative units. The organizational and working methods are justified by the results obtained in implementing the Uniform National Plan, in enhancing economic effectiveness, and in contributing to growth of the national income and national wealth. The efforts to rationalize the economy to include all aspects of socioeconomic activity have begun to materialize strikingly, especially in the 1970's, when growth of the social product was overtaken by that of the national income and the growth rates of the net industrial and agricultural outputs exceeded the overall indicators. This is one of the characteristics of the new quality and reflects the conception of Romania's economic growth in the present stage. Growth of the national income and national wealth, the sole source of greater general prosperity, can narrow the gap between Romania's developmental level and that of the economically advanced states.

Implementation of the requirements of the new quality in all activities and those of a new balance in the national economy will stimulate Romania's entire social activity, and the measures undertaken to greet the 40th anniversary of the victory of the Antifascist and Anti-imperialist Revolution for Social and National Liberation and the 13th Party Congress will lend a new impetus to this process and help to raise the nation to higher levels of civilization and progress.

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ROLE OF TECHNICAL INNOVATION IN ECONOMIC GROWTH

Bucharest ERA SOCIALISTA in Romanian No 12, 25 Jun 84 pp 5-7

[Article by Dr Eng Victor Calcan: "Technical-Scientific Innovation and Effective Economic Growth"]

[Text] Nicolae Ceausescu said, "We have experience, we have institutes, and we have all that is necessary to enable Romanian research to fulfill its vital tasks and commit all its forces to implementation of the programs adopted to keep Romania in the first ranks of the technical-scientific revolution in a number of products."

Technical and qualitative improvement of industrial products is a vital problem today for continued progress of the Romanian economy as well as effective export of products with competitive technical-operational and economic parameters that can meet the demands of the domestic and foreign customers as well as the keen competition on the world market. Approaching the highly complex and urgent problems of quality from a modern, global viewpoint, the Program for Technical and Qualitative Improvement of Products, Reduced Inputs of Raw Materials, Fuels and Energy and Better Use of Raw Materials and Materials in 1983-1985 and on to 1990, drafted at the party secretary general's suggestion and approved by the Plenum of the RCP Central Committee of November 1983 and by the Grand National Assembly, outlines the ways and means of further enhancing the competitiveness of Romanian products with the best manufactures on the world market and encourages and mobilizes creative technical-scientific work, initiative and the innovating spirit, while requiring continuing improvement of the workers' occupational training.

The highly dynamic character of the qualitative and technical standards of the products require scientific research and technological design to make a more regular contribution to their modernization by taking account of the new developmental trends appearing in the world and even surpassing them in some cases. As Nicolae Ceausescu pointed out at the Plenum of the National Workers Council in May 1984, "Technical and qualitative improvement of the output is essential to Romania's development as well as its active participation in the international division of labor and cooperation or collaboration with other states of the world. Research work, the central institutes, the research institutes and the

National Council for Science and Technology have an important part to play in this, and they must take the firmest measures to implement the programs and the plan provisions in this field of endeavor."

To better define the extent of the quality requirement, since continuing improvement of the quality of industrial products is one of the essentials for economic growth and competitive power on international markets, we think the complexity of the very concept of "product quality" should be pointed out first of all, because the concept of quality actually covers a whole series of characteristics at once, such as performance, reliability, potential, economic effectiveness etc. that illustrate the considerable extension of the limits of this concept. Accordingly a number of aspects can be attributed to the quality of industrial products that permit grouping their characteristics as follows: technical aspects (technical-operational performances, design, reliability, potential, effectiveness in operation, durability etc.), economic aspects (production costs, level of labor productivity, degree of exploitation of raw materials and materials, fuel and energy inputs, sale price, servicing cost during the guaranteed period, operating costs, maintenance and repair costs, degree of recovery and reuse, etc.), and social aspects (extent to which the quality of the manufactured products meets the social requirement, technical-structural and qualitative aspects of labor safety, environmental protection, quality of life, etc.).

Accordingly product quality reflects the quality of a number of activities in which the researchers, designers, producers, sales networks and beneficiaries are involved, such as prospecting the domestic and foreign markets, critical analysis of the products in manufacture and studies for assimilation and approval of new products and modernization of those in current production in the light of the quality obtained and the world trends, scientific research and technological development, typification and standardization, technical standardization of the material and energy inputs, technological engineering and design, organization of production and labor, preparation for manufacture, manufacture of the products, performance of technological tests, organization and effectiveness of technical quality control, checking the performances of products for beneficiaries, organization of service, exploitation, maintenance and repair operations, etc. Of course all these activities must be performed as well as possible, because faultless design of the product can be compromised by unsatisfactory manufacture and, conversely, faultless manufacture cannot compensate for defects in the design. Moreover improper use cancels the advantages lent the product by design and manufacture.

But quality does not mean just the sum of the properties and characteristics of a product, nor is it limited to its, technical, economic and social aspects. It is something far more dynamic than that, namely a design and production activity that will keep providing new functions through the products it makes, functions that the users may never have imagined or did not even know they needed.

Furthermore, as the Program for Technical and Qualitative Improvement of Products points out, quality must provide for a maximum use value with minimum outlays in both manufacture and use, because making higher quality products does not mean just meeting the beneficiaries' demands but also cutting production and operating costs and the inputs of raw materials, materials, fuels and energy while increasing labor productivity. To sum it up, higher product quality, obtained

primarily by a sustained scientific research and technological engineering effort, makes it possible to meet the same volume of requirements with a smaller quantity of manufactured products because of their greater durability and prolonged length of service before they have to be replaced. Meanwhile it reduces the investment effort by rationalizing the use of the production capacities. Accordingly higher quality is no luxury or any mere option but an objective necessity and a major requirement for dynamic economic growth.

There is a direct connection between technical-scientific innovation and quality, in that an effective scientific-technical activity is one that leads to manufacture of higher quality products that can best meet the users' needs. Elena Ceaușescu, first deputy prime minister of the government and chairman of the National Council for Science and Technology, pointed out in her report to the Grand National Assembly on the Program for Technical and Qualitative Improvement of Products, Reduced Inputs of Raw Materials, Fuels and Energy, and Better Use of Raw Materials and Materials in 1983-1985 and on to 1990 that the program, which is to be implemented in three stages, is chiefly intended for technical and qualitative improvement of the output as a whole by intensifying redesign and modernization operations, improving the varietal structure, and assimilating new products with better performances in all fields and especially in metallurgy, machine building, the electrotechnical and electronics industry, chemistry and the consumer goods industry. Modernization of manufacturing processes and assimilation of new products on a higher technical level will raise the proportion of products meeting high world standards to about 69 percent in 1985 and 95 percent by 1990.

In order to maintain this extensive effort toward technical-scientific innovation and to implement the specified provisions completely, all economic units and research and design institutes are required, as we know, to plan specific programs for each product and technology, to be updated annually according to the scientific research findings and the international trends of technical progress.

Since sustained efforts are being made all over the world today to enhance product quality and competitive power on the basis of new scientific-technical advances, we think it is unquestionably of interest to examine some of the most important trends in world science and technology in 1985-1990. For this purpose we shall refer to a study of the French Observer for Advanced Technologies made at the request of the General Plan Commission in connection with preparations for the Ninth Plan. (1)

In general, microelectronics, biotechnologies and automation of production processes are now considered factors for predominant changes with a powerful impact upon all industry. Some main directions of development might be noted in the light of the development of some other technologies too.

Most important is the technological supremacy of the information programs. The future demands strong positions in the field of the most developed information instruments and equipment and also in that of developing standard information programs for microcomputers and classic computers. In this field the emphasis will be upon "productives," that is automated production with data processing and use of robots and flexible automation, and upon decisional data processing, office data processing, computer-assisted education, etc.

Materials, and especially industrial plastics, materials for the electronics industry, industrial ceramics and compositions comprise another field around which technological development is to be organized and which is receiving the same attention as microelectronics and the biotechnologies. Thus the introduction of thermomechanical ceramics in construction of motors is opening up extensive prospects while becoming a strategic field for all producers of motors with better characteristics. The compositions also have great prospects for utilization and will be increasingly used in many sectors, such as land transportation, ship-building, aeronautics and cosmonautics, the electronics industry, the consumer goods industry, et al.

Note also the importance that use of the new developments in optics is going to have, and especially the use of coherent light generated by means of lasers. Telecommunications through optic fibers will be expanded, and certain applications of lasers will be rapidly developed such as information storage (reaching the public via audio and video disks), electron optics [optronica] for measurement and machining, and the applications of industrial collectors and analyzers (Data collection is becoming increasingly important in automating and rationalizing industrial processes). Such developments of modern optics are expected as optics in infrared and microlithographing integrated circuits, and in the future it is planned to integrate optical circuits in computers.

It is planned to modify technological machinery, equipment and installations by a number of techniques resulting from applications of electromagnetism, acoustics, plasma, special mechanical effects, etc.

And so we can conclude that by the end of this decade technological innovation and development will be organized around five poles, namely power engineering, electronics, materials, biotechnologies and "productics." The traditional industries as well as their new fields will develop under the influence of the technical-scientific measures and technologies emanating from those five poles. In view of the swift changes in science and technology and their effects upon development of production as a whole, naturally no product's technical and qualitative levels are final or set once and for all. The quality and competitive power of products are indicated by certain parameters that determine them and describe their nature at a given point and are very relative in time. The trend is toward constant change, a new quality and a higher use value, and the trend is continually favored by the increasingly accelerated rate of technical-scientific progress and by the diversified requirements and growing demands of the beneficiaries, all of which make the technical and qualitative levels of the products particularly dynamic.

These circumstances lend particular importance to the obligation (specified in the Program for Technical and Qualitative Improvement of Products) of the enterprises, centrals, ministries and scientific research and technological engineering institutes to form technical and economic data banks concerning comparable products throughout the world, which data are to be used in analysis of the technical and qualitative levels of the products in domestic manufacture, in development and approval of new products, and in further modernization of the products in current manufacture.

The rapidity of technological evolution, which makes corresponding changes in the quality and performances of the products, inevitably leads to constant

changes on the international market, so that no position can be considered permanently gained and conversely no position can be considered permanently lost. This pronounced dynamism can and must be used to maintain the positions gained as well as to gain new industrial positions in the next technological stage. Of course this means that all enterprises must have the necessary means for prospecting, technological expertise, forecasting and evaluating and they must use them in the most effective way so that they can act rapidly and at minimum risk. In other words, the enterprises must show complete industrial and technological flexibility, and in securing the technical and qualitative levels of their products they must employ a real data-processing strategy in actual time.

Technical and qualitative improvement of products and growth of labor productivity essentially depend upon the extent of the professional and technical knowledge of the workers who design, manufacture and use the products as well as the technological machines, equipment and installations needed to manufacture them.

But it is becoming increasingly evident that the training provided by schools alone is not sufficient. The constant "irrigation" of all industrial sectors with more and more new scientific and technical discoveries, the constant renovation of the technologies of the traditional industries by those in the peak fields, and the accentuated technological transfers within the same sectors or between sectors keep creating openings for new activities necessarily requiring new professional disciplines. Moreover the trends that are appearing in industrial development indicate that it will become a more and more predominantly intellectual activity and that the technical and qualitative levels of the output of an enterprise and its technological capacity will no longer depend solely upon the researchers and engineers it has but more and more upon its entire staff. This means that professional training and improvement must be continued for the duration of all the workers' activity and that it must also be correlated constantly with the changes and reconversions in the enterprise production program, so that personnel training may be called a priority strategic function of the products' competitive power.

In general, continuing improvement of professional instruction and training requires a comprehensive view of the process, involving the entire education of working personnel and the population as a whole. Since technology is becoming more and more a matter of culture today, it is necessary to intensify widespread dissemination of scientific and technical knowledge among all workers.

I have mentioned these few points in order to stress the particularly urgent importance on the provisions on personnel training in the Program for Technical and Qualitative Improvement of Products. The problems of technical-professional training are acquiring certain distinctive features in Romania due to the rapid growth of industry, requiring employment of more and more people with suitable qualifications in production. Moreover firm application of the party's and state's general economic policy based on use of the latest scientific-technical advances is expediting modernization of the enterprises, which are being outfitted with technological machinery, equipment and installations and increasingly modern computing equipment and measurement and control devices accompanied by expanded mechanization, automation and cybernetization of the production processes. Of course all this requires thorough and regular instruction and technical-scientific indoctrination of all working personnel and regular updating of specialized knowledge, and in some cases retraining of the labor force.

To this end the Program for Technical and Qualitative Improvement of Products includes specific tasks for the Ministry of Education and Instruction and the other Ministries and for the Stefan Gheorghiu Academy as well. Meanwhile, in order to best solve the problems of modernizing every economic unit for purposes of technical and qualitative improvement of their entire output, their collective management organs are expected to take very firm steps to improve the professional and technical-scientific knowledge of the workers and all personnel, to enhance their qualifications and to broaden their horizon of knowledge.

In addition to continuing enrichment of professional knowledge, the Program for Technical and Qualitative Improvement of Products, Reduced Inputs of Raw Materials, Fuels and Energy, and Better Use of Raw Materials and Materials in 1983-1985 and on to 1990 also calls for strengthened technological discipline on all levels of production and establishment of a climate of order and maximum individual and collective responsibility for the manufacture of competitive products on a high technical level that will meet the demands of the domestic and foreign markets. Accurate implementation of the provisions requires a massive effort of technical-scientific innovation and a continuing appeal to the intelligence and creative power of the workers, technicians, engineers and all personnel in order to secure a highly effective economic growth and a qualitative improvement of the Romanian economy.

#### FOOTNOTE

1. "Les enjeux technologiques des années 1985-1990," CARNIERS D'ETUDES ET DE RECHERCHES POUR LA PREPARATION DU 9<sup>e</sup> PLAN, No 1, juin 1983. Editions de la Documentation Francaise, Paris.

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## PREPARATIONS FOR BUILDING NUCLEAR POWER PLANT IN SERBIA

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 3 Jul 84 p 2

[Article by Radmila Jovanovic: "Uncertainty in the Challenge: Preparations Begun for the First Nuclear Powerplant in Serbia"]

[Text] Preparations have begun in Serbia for the construction of the first nuclear powerplant, which should be completed by 2000, in accordance with the long-term development of the power industry. The preparations began this year with relatively modest funds: 300 million dinars, i.e. only 0.8 per-cent of the total investments this year in the Belgrade Combined Electrical Industry [ZEP], have been allocated for research on raw materials and finding a location for the future nuclear powerplant. The nuclear powerplant work organization being established has actually begun to operate within this framework, with Cedomir Boljanac at its head as chief director.

Serbia will probably not be alone in this very expensive business (a 1,000 MW nuclear powerplant costs about \$2 billion). The decisions in principle by the executive councils of the assemblies of Vojvodina and Macedonia to participate together with Serbia in the preparations for construction (exploratory work) will not end with this, and that means that there are real possibilities and economically justified reasons for all of the work to be done jointly.

"This work is very delicate and lengthy. We have to ensure two things: domestic raw materials, and maximum participation by the domestic machinery industry. This requires considerable funds, and combined Yugoslav knowledge, experience, and work, especially in the machinery industry. Activities have to take place simultaneously. The search for domestic raw materials will depend directly on us, and not one decision will be made until there is solid evidence in an appropriate study. With respect to the machinery industry, it has to organize itself to make use of the chance it is being given and to master to appropriate technology," Cedomir Boljanac says.

### Carter's Gift From the Satellite

The Serbian Assembly has committed itself to the construction of the nuclear powerplant by 2000, but a decision has not yet been made on when this work will begin. The impression is that there is plenty of time and that funds will be obtained without any problems, which is merely a deception. Boljanac

says that an average of 12 years is necessary to build such an installation, of which half the time is spent on suitable preparations just so that the building of the powerplant will proceed without technical difficulties. As for the funds, they will be obtained depending on the results from the funds already invested and on the decision of the ZEP to begin construction.

Of the 300 million dinars allocated for this year, 200 million will be invested in searching for raw materials, primarily on geological prospecting for uranium ore, and a smaller part on further work on obtaining it from phosphates at IHP in Prahovo. The rest of the money is being invested in finding the most suitable site for building the nuclear powerplant.

One does not search for uranium randomly. Uranium reserves were investigated very intensively after the war, up until almost the 1970's, so that Serbia has been combed through thoroughly, and there are more grounds for optimism than for throwing up one's hands. Prospecting was recently renewed in accordance with the most modern methods, on the basis of which we should determine whether these deposits are economically accessible.

"At one time former U.S. President Jimmy Carter, when visiting our country, made us a gift of some satellite photographs, in which traces of some ores can be seen. We have now begun, based on this, our own earlier photographs and investigations, and the latest ones, to drill at some sites. After all such satellite photographs of any country can be purchased in the U.S. and used as good evidence for prospecting for mineral wealth," Boljanac explains.

#### The Same Whether It Worked or Not

Since Yugoslavia and Serbia itself are using a considerable amount of phosphates, the research in Prahovo (together with several other producers of mineral fertilizer components, and institutes) on obtaining uranium has not advanced beyond estimates to semi-industrial operation. In the next 2 1/2 years, an answer should be obtained concerning how much the uranium would cost, and what technical-economic parameters are essential for reaching a decision on using it.

The search for the best location for the future nuclear powerplant is neither simple nor easy. As Boljanac says, it is necessary to find a location with the kind of ground characteristics and hydrometeorological conditions in which the indicators vital for nature and for man will be the same when the nuclear powerplant is operating as if it were not operating, or as if it did not exist. The selection of such a location requires drilling the ground, since it has to possess ground that is geologically very stable, without underground water, with a suitable flow (or lack) of wind, and much else.

"It is only on the basis of this that one can order the equipment. Consequently, as the investor, we will try to have papers (studies) confirmed several times over for everything, in order to ensure the quality and so that if something does not work, we will know who is responsible for it. We cannot allow our economy to fall behind in this work. The financing of every task has been adjusted in such a way that no one will be able to obtain funds for the next year unless he has achieved a solid result, even if a negative one," Boljanac asserts.

Thus far a total of 19 locations have been analyzed for the site of the future first nuclear powerplant in Serbia, with two of these in the area of the province of Vojvodina. The most attractive sites are near the Danube, as is confirmed by the number of these--six. This is quite understandable, since water is one of the essential conditions, and the ground near this river, at a greater depth, is not bad.

Serbia has only started to work on nuclear technology in the power industry. As is being stated, all of the experience to date in this is being united at the national level within the framework of the so-called NUKLINA [Institutes for Nuclear Sciences and for Research on Nuclear Raw Materials] and JUMELA [machinery industry]. It is only necessary to assess who can do what best in cooperation with others in Yugoslavia and abroad, reach an agreement, and organize. The nuclear powerplant is a challenge, a large and expensive project that can yield great earnings for many people, but can also cost Serbia and Yugoslavia an enormous income in the form of indebtedness even greater than necessary, resulting from disagreements.

9909

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## ELECTRIC POWER LINKS WITH EUROPEAN SYSTEMS

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 10 Jul 84 p 2

[Article by Radmila Jovanovic: "Security With a Smaller Reserve"]

[Text] This fall will mark the 20th anniversary of cooperation between the Yugoslav electrical industry and the so-called interconnection of Western countries, UCPTE, or rather with the southern part of it, the electrical industries of Italy, Austria, and Greece (SUDEL), to which Yugoslavia belongs.

Last year a total of 4.3 billion kilowatt-hours of electricity, about 6.6 percent of Yugoslavia's annual production, were exchanged with the UCPTE (imports and exports together). The Yugoslav trade was close to the average mutual supply (from 7 to 10 percent) from current production between the member countries of UCPTE individually. This mostly had to do with the importation, loan, and storage of electricity, and very little with exports, since no republic or province in the country has the right to export electricity if there is not enough of it and no one is interested in paying an appropriate price for it.

### Island Work

"The exchange of electricity with the neighboring countries depends in principle on the size of the systems and the so-called voltage levels of foreign long-distance power lines. The larger the system is, the higher the voltage and the more numerous the long-distance power lines, and thus the possibilities for exchange are greater. For several reasons (this is a product with strategic significance) the average exchange among the countries in UCPTE does not exceed 10 percent of the annual production of electricity in any of them," says Prof Mihailo Golubovic.

Yugoslavia is a member of the Association of Western Electricity Producers and Distributors (UCPTE), with which it has both bilateral and multilateral (associated with groups or otherwise) exchange. The long-distance power line links with the neighboring countries were established by the construction first of a 110 (without Albania), then a 210 (Italy and Austria), and finally a 400 kilovolt network (Romania, Italy, Greece, and Bulgaria). It was only the building of the latter, the 400 kilovolt network, that created broader possibilities for exchanging electricity both among republics and provinces within Yugoslavia, and also with the neighboring countries that belong either to the so-called Western or Eastern interconnections in Europe.

In spite of the long-distance power line links, exchange with the other large European interconnection through the unified CEMA electrical system is neither continuous nor anywhere near as frequent as with UCPTE, for the simple reason that powerful long-distance power lines do not exist in the countries that belong to it. This is also the main reason why Yugoslavia decided at one time to hook up to the UCPTE, i.e., SUDEL, system, with which the possibilities for exchange were broader and more flexible, and in which the quality of operation was higher. Naturally, the Yugoslav electrical system would most prefer working simultaneously with the UCPTE and with the CEMA unified system, since it borders these two large European interconnections. Thus, exchange with the neighboring countries in the CEMA electrical system is intermittent and is reduced to so-called island work. This takes place with Romania through a 400 kilovolt long-distance power line, but it is not possible to bring this from Bulgaria, or at least that rarely occurs. Bulgaria's electrical industry is not capable of separating part of the consumption from Sofia and transferring it to the Yugoslav system when necessary. Thus the 400 kilovolt long-distance power lines with Romania and Bulgaria are used far below their capacities.

#### Threats Over Lack of Discipline

The price of a continuous link to such a large system as UCPTE is not only the exchange of electricity when that suits Yugoslavia, but also providing assistance, and the transit that first began in 1982. Then 105 million kilowatt-hours were carried through our system for Greece, and a year later already 405 million. This does not really delight anyone, even though in exchange for the transit we receive 15 percent of the amount of electricity carried, since the long-distance power lines are thus tied up and the possibility of maneuvering for our own needs is reduced, especially at a time of high demand.

"The exchange with the neighboring countries in the SUDEL group takes place in two forms: commercially, and as so-called assistance in periods of difficulty. The commercial exchange is agreed upon annually with each country. One of the possibilities of this commercial exchange is storing electricity when it suits us in one of the neighboring countries (usually in Italy and Austria, but also in Switzerland and France) if they have the capacity and capability for this--when accumulation hydroelectric plants are operating. Usually we store it in May and then take it in December, when things are most difficult for them and for us; thus, for 1.5 kilowatts of electricity stored in that manner in the spring, we usually receive only 1.0 kilowatt-hour in the winter. According to a self-management agreement on joint work, all of the exchange goes through the Community of the Yugoslav Electrical Industry, and thus not one republic or province can export even 1 kilowatt-hour of electricity by itself. In regard to exports, we are usually talking about surpluses," Prof Golubovic explains.

No less significant is the exchange in the case of damage-related assistance (a power station dropping out of the system), which goes into effect as soon as assistance is requested, and it is provided up to the technical limit of the receiving capacity. Every kilowatt-hour of electricity obtained

in this manner is paid for normally, without any increases or extortion, in the period in which it is said that the damage will be removed or that a power station from the reserve will be included.

The extremely good cooperation with the united electrical system in UCPTE is often disrupted by the electrical industries of the republics and provinces which, particularly at times of a shortage of electricity, draw considerably more power than what is being placed at our disposal. Last year, as has frequently been heard, the least disciplined were the electrical industries of Kosovo and Macedonia, and thus the joint dispatching center of UCPTE has frequently threatened to expel JUGEL from its interconnection.

In addition to the exchange of electricity, the Yugoslav electrical industry also has well-developed scientific-technical and professional cooperation with the members of UCPTE and CEMA. It takes place bilaterally or through separate professional and scientific groups within the framework of the UN Economic Commission for Europe and CEMA.

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WESTERN REPORT ON IMPEDIMENTS TO TOURISM, HARD CURRENCY INFLOW

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 17 Jul 84 p 10

[Article by Viktor Meier: "How Belgrade Tries to Avoid Acquiring Foreign Currency--Just What Is It That the Regime Has Against the Money of Tourists and Guest Workers?"]

[Text] Belgrade, July 1984--There are only six or seven cars at the border crossing waiting to enter Yugoslavia from Hungary, but it takes almost half an hour for the Yugoslav customs officials to give the go-ahead. The reason: Yugoslav guest workers returning home for a visit are searched for bank notes and have to unpack their cars entirely while being treated rudely by the officials. If these let something go through at the border, the workers run the risk of being stopped at checkpoints farther inland and being searched once more and being fined and assessed a specially high duty. While the guest workers and also border commuters are being searched, foreign tourists wait their turn. At Spielfeld, the major border crossing from Austria, they wait 5, 8 or 9 hours on Friday nights or Saturdays. Every year Yugoslav tourism representatives circulate the fairytale that this time it will be "better." Instead it gets worse every year.

Shortly after World War II the present Yugoslav regime ordered a study to be prepared about which areas would be most likely to earn foreign currency for Yugoslavia. The result: Tourism, remittances by Yugoslavs working abroad, the production of energy and transit traffic. Of course the idea was rejected wholesale at that time since it did not jibe with the Marxist-Leninist teaching about the primacy of heavy industry. A Yugoslav journal discovered the study some time ago and held it up to those in power, stating that Greece had worked its way into Europe economically on the basis of tourism and remittances by its guest workers.

In theory many Yugoslav officials these days are inclined to support the post-war study, but--as is so often the case in Yugoslavia--there is a problem with implementation. Surely, it is being objected, guest workers, who are better off anyway, cannot be allowed for instance an extra quarter of a kilogram of coffee above the amount of 1,500 dinars (about 13 deutsche marks) set as the maximum value for duty-free import by travelers. At any rate guest workers cannot be trusted politically; they live in the West--which is, as every Yugoslav policeman is told again and again, obviously conducting a "special war" against Yugoslavia.

Since most border crossings are in Slovenia, though not under the jurisdiction of the Slovene Republic, it was there that we asked the question how in fact could a country put itself on a sound economic footing if it subjects its best providers of foreign currency--tourists and its guest workers--to harassment and difficulties? The reply was a sad nodding of the head: everything was being done, and complaints were constantly being made to the authorities; at some crossings the terrain alone made it impossible to separate foreigners and Yugoslavs, and the Austrians too were not particularly cooperative in this respect. It does appear a little strange to think that Austria is participating in discriminating against Yugoslav citizens.

The "special war" begun by the Yugoslav customs officials at the border is continued by the police particularly in the east and south of the country. Yugoslavia could earn a lot of foreign currency if it built good motels and restaurants along the highways, but this apparently is beyond the capabilities of self-administrative socialism. Instead the police go out looking for foreign currency. The Republic of Macedonia, for example, is unable to come up with a single motel which would be considered decent by Western standards between Kumanovo and the Greek border. On the other hand, just as in southern Serbia, police cars lurk behind every curve of the road, being particularly after transit trucks and collecting fines with car traps for the most trivial reasons. One can notice both trucks and private travelers in transit trying to do their best to get across the border to Greece or Bulgaria before dusk; in any case one can see an unusually large number of trucks toward evening on the Greek or Bulgarian side of the border.

A number of things could be said about the structure and organization of Yugoslav tourism itself. The trend below the surface appears to be hostility toward the well-paying individual tourist. Though he is prepared to pay, the individual tourist is bound to feel out of place even at a top-class Yugoslav hotel on the Adriatic. If he can get a room at all ("We have groups here" is what he generally hears right off at the reception desk), he has trouble finding a place in the dining room because everything is arranged for groups and delegations. Special wishes seem to be considered a nuisance by the hotel personnel. If one wants to feel comfortable, one had better take a room in private home in Yugoslavia (but such rooms, though they are more pleasant, do not always offer the ultimate in comfort) and make one's own eating arrangements. This leads to the absurd situation of so-called well-paying individual tourist detouring to cheaper private lodging, where the foreign currency generally does not flow into the government coffers at all, while the cheaper mass tourism holds forth in the so-called luxury hotels. Only in Slovenia has the decision been made this year to try it the other way round. The largest hotels in Bled and Portoroz no longer accept groups, and, lo and behold, daily inflow of foreign currency from the pockets of individual tourists is already approaching the 60 dollars a day figure for that category in Italy.

In Yugoslavia tourism continues to be a political matter. The hotel directors in Dalmatia generally are former local officials who made no headway in their political careers. In Dubrovnik some hotel directors were specialists from

other fields. One day the community noted that they were developing too much of a "feeling of ownership," and so they all were transferred or removed altogether. After this change of directors, the Hotel Excelsior in Dubrovnik, a leading establishment in the country and one rich in tradition, stated laconically in response to a request for a reservation, "We no longer take reservations by telephone." Yugoslav tourism is running the risk of going the Romanian rather than the Greek way; what has been built up with great effort is crumbling again.

The consequences can be expressed in statistics. In the past few years Yugoslav intake in foreign currency from nonmerchandise traffic has steadily decreased. While it still amounted to 3.2 billion dollars net in 1979, and 3.06 billion in 1981, it was down 1.9 billion dollars in 1983. Earnings from tourism are decreasing despite a rise in overnight stays, and a large part of the foreign currency is privately earned. Yugoslav guest workers abroad, fewer in number than they used to be anyway, are so tired of the constant trouble caused by customs and police that they come home more rarely, remit less money, and even when they come home prefer to leave the money abroad. The opportunities offered them time and again in the so-called "small economy" have long since proved to be eyewash: at the local level every conceivable obstacle is put in their way. Most guest workers have transferred their money from the insecure foreign currency accounts with Yugoslav banks to foreign banks, and many Yugoslavs residing in Yugoslavia are following their lead.

Typical of the attitude of official Yugoslavia toward Yugoslavs abroad is a report issued jointly recently by the Foreign Ministry and the Ministry of Information to the parliament in Belgrade. Many Yugoslavs who have lived abroad for a long time, the report states, have "lost contact with political conditions in their homeland" and are harming Yugoslav interests.

Just as in other countries, one also encounters in Yugoslavia time and time again friendly people, including people in uniform, who are ready to help and make the impossible possible. What counts, however, is the system. When there are no tourists and no remittances by guest workers, when Yugoslavia presents itself as an unpleasant country for transit (Bulgaria and Albania are already scheduling boats for transferring cargoes of trucks on the Adriatic and on the Danube), this becomes a problem for the balance of payments. As far as utilization of foreign capital investment is concerned, it is perhaps already too late. For years now, Yugoslavia has rejected reasonable and attractive legislation for this, and now, when one is getting closer to the subject, potential foreign investors are likely to fear that a new law, more accommodating but passed only reluctantly, will also be sabotaged at the administrative and local level.

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